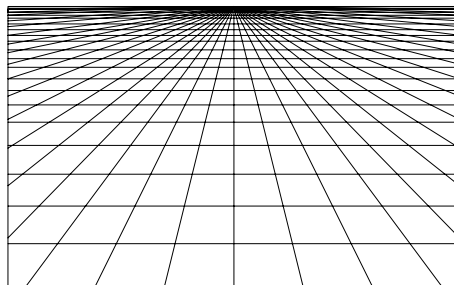




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AALBORG UNIVERSITY
DEPARTMENT OF BUSINESS STUDIES



ESST

The European Inter-University
Association on Society, Science and

REINTRODUCTION OF FISHERY IN HALKAER AADAL

*-Can local participation help to provide sustainable
development?*

Merethe C. Heyerdahl Holst
University of Oslo/ Aalborg University
Innovation systems, social and ecological change
2001

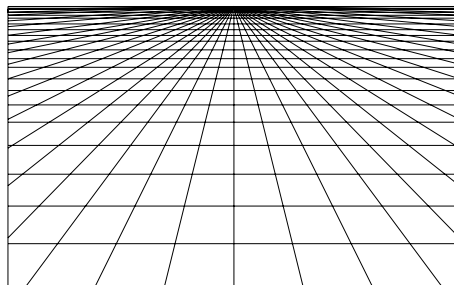
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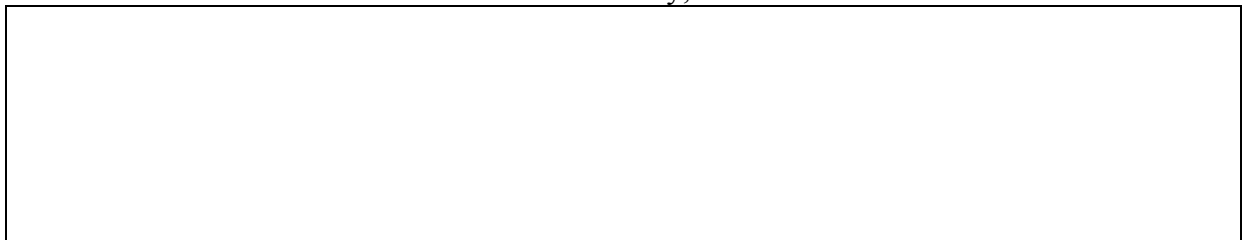


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Abstract

The thesis focuses on a local community in Denmark with large amounts of agricultural nourishment polluting the bay. An effort of creating sustainable development is taken by the local habitants. Sustainability is the main goal and includes ecology, economy and social elements. A means towards the goal is a self-sufficient fishery with local participants, which creates two to three jobs. The main approach in the thesis is: ***“Can a reintroduction of fishery in Halkaer bay, with the local people as driving force, help to provide sustainable development in the area of Halkaer Aadal? ”.***

Local participants in the political institution and the civil society are politicians from municipalities and county, and the 12 members of the folk association. There are no participants in the economical institution, however some habitants want to become fishermen, and enlightenment, teaching and fresh fish can involve customers. The fishery vision has a strong focus on the economical elements and the technological dimensions “products” and “organisation”. “Knowledge” and “techniques” is not mentioned.

The county’s and municipalities concern is to reduce the pollution. The folk association both as administrators and in the civil society focus on enlightenment, lack of knowledge, and local participation. They can establish the total volume of fishing quota, allocation of quotas and questions of locations to fish by the help of teaching and expert help. The use of historical knowledge can be increased. Mental barriers may be deleted by using previous fishermen’s pride and love for the work, while learning about “cooperatives” can deal with the lack of money. Social events, like “subject-days” can diffuse knowledge and strengthen the common identity.

At last, to be able to make the vision of a fishery become a reality, it is a necessity for the local institutions to cooperate and coordinate their initiatives.

Acknowledgement

I want to thank my two motivating counsellors Pia Johansen and Jan Holm Ingemann at Aalborg University for their guidance through my work on the master thesis. Without their constructive directions I would not have managed to delivered the thesis on the due date.

I also want to thank my local informers in Halkaer Aadal who were so kind to participate in my interviews for the thesis. I especially want to thank Peter Soendergaard and Jens Oestergaard. Peter Soendergaard made it possible for me to stay in Halkaer for a period by finding a place for me to live. He also found a bike I could borrow and he has answered my questions through out the whole period of the thesis. Jens Oestergaard organized an excursion on the fjord with an old fishing boat, and he also invited the other informers of the thesis to participate.

At last my husband deserves to be thanked since he was so kind to help me with the language and who supported me during the work on my master thesis.

Preface

The environment has been one of my main interests since I studied chemistry- and technical processes as a teenager. During my social worker education I developed an interest in development of country districts through the subject “community work”. Social anthropology gave me the interest in examining the communities thoroughly from the inside, the concern about developing countries and an interest in primary industries.

ESST combined most of my earlier interest, and especially the specialisation at Aalborg University. I believed the ESST programme could teach me more about the subjects above. My focus was on sustainable development in primary industries and I hoped to include a developing country perspective. However, the importance of being closer to the local community made me choose a project in the countryside outside Aalborg in Denmark. I chose to participate in a project called the “Ecological Experimental area” in Halkaer Aadal.

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1. Introduction

1.1 Focus of the paper

This thesis is a contribution to a project in Halkaer Aadal¹. Halkaer Aadal is an area outside Aalborg in Denmark, and a part of a bigger area in Northern Jutland that was in 1995 pinpointed by the county to be an “especially environmental-sensitive area”. The reason it was pointed out was an evaluation that a more environmental friendly practice would have a great affect on the ground water, rivers, bay and nature areas. The area of Halkaer Aadal is for one thing an international bird-protection area², which means that the balance in the nature and water conditions must be ensured to preserve specific rare birds and plants. However, Halkaer bay receives too much nourishment from the open land³. This has caused a large reduction and death of the fauna, and the bottom “turn over” several times each year⁴. The rich fishery that once was in the area has disappeared.

Some local inhabitants are in these days, in cooperation with Aalborg University, taking the first step towards carrying out a project called an “Ecological Experimental Area”. The goal is to create sustainable development and to further develop the country district. One of the means towards this is a fishery project, which still is a vision. Halkaer Aadal has a vision about becoming locally self-sufficient with fish and creates two to three fulltime jobs⁵.

The approach for the thesis is: ***“Can a reintroduction of fishery in Halkaer bay, with the local people as a driving force, help to provide sustainable development in the area of Halkaer Aadal? ”***

The thesis will be based on the Halkaer report and the vision of the reintroduction of a fishery. In the thesis there will be a survey of the notion of sustainable development since it is

¹ “Aadal” means that the area is a river valley.

² Ingemann, April 2001.

³ For more about the nature conditions read chapter 6.2 and 7.2.2.

⁴ Ingemann, April 2001.

⁵ Ibid.

the base and the goal of the project. The thesis is also a survey of how the vision and the actual local institutions can be connected through local participation, which is believed to contribute to sustainable development. Local participation will be examined by using a theory about institutional change, which divides the local community into three institutions. The theory will be used to map the local participation and find out in which institutional frame the participation is to be found. The three institutions are: The transaction system, which is the professional life and trade, the empowerment system, which is the civil society, and at last the governmental institution. The thesis will also describe that there may be different concerns in the three institutions in the choice of technology by using a broad definition of the notion of technology. The paper will compare sustainable development in the different institutions, and it will show that there may be a higher concern for sustainability in nature, environment and for future generations when including the Empowerment institution. Agriculture will be used as an example of this development. Ecology is in progress due to the civil societies choice to buy products not only as an article but also for the preservation of nature and ethics for animals, etc.

The three main discursions in the thesis will be pointed out by using the institutional approach. The first discursion looks at if there are local habitants who want to start a local fishery. Next discursion looks at the following questions: Is it the government that must take a position whether it is possible to re-stock the bay with fry? And is it the government that must control and make the rules concerning fishing quota, allocating of quotas, and how the fishery will be? The third discursion looks at the situation in Halkaer Aadal where the civil society wants a fishery. The questions here are: Will the civil society demand local fish? And are the civil society's customers willing to pay more for a local fishery with some fixed conditions⁶?

⁶ When using agriculture as an example, a *fixed condition* concerning ecological food can be the prohibition of using chemical based- manoeuvring and antibiotics. I.e. the food must be produced in certain ways.

1.2 The structure of the paper

The last part of chapter 1 will present the methods of the thesis. This explains my practical approach, and why I chose to use the different methods.

Chapter 2 is a survey of the project of the Ecological Experimental Area and is a joint product by my fellow students Hilde Madsen Jacobsen and Camilla Melby, and I. The EEA is presented to better understand the development in Halkaer Aadal and to understand the local actors. The project is important for the development towards sustainability, and local participation is one of the key thoughts in the project. The theoretical idea behind the projects starts the chapter, followed up by a part about the area of Halkaer Aadal in general and the EEA in practice.

The thesis's approach is tied together of four main parts: Halkaer bays environment, sustainability, a fishery and local participation. These parts are explained in the following chapters together with some background information that create a better understanding of the situation.

Chapter 3 is a theoretical chapter. The first part of the chapter is about sustainable development and is also a joint product by my fellow students and I. Sustainable development is presented because it is the base and the goal of the project. The concepts ambiguity and definition is viewed along with the concepts historical development. The second part of the chapter introduces an economic theory that focuses on promoting sustainable development through institutional change. This theory is used later when examining local participation in the fishery project. Thirdly the chapter will give a survey of the notion of technology that will be used to describe that there may be different concerns in the three institutions in the choice of technology. At last there is a presentation of the Kolding manifesto, which is developed

through a discursion about technology, democracy and sustainability. The manifesto is a background for the theory of the EEA and is used in the thesis as an ideal for sustainable technology and local development in Halkaer Aadal. The manifesto is also used since it view local participation as important.

In chapter 4 the EEA's vision of a fishery project is introduced. The vision is the case of the thesis. The chapter starts by introducing Halkaer folk association and its organisation. This is done to better understand the actors behind the vision. The vision itself is then presented.

The history of fishery and agriculture are the next two chapters contents. This is looked at to be aware of the current situation and because the vision talks about re-establishing a fishery. Different aspects from history may be of current interest, like learning from earlier techniques and old mistakes. Chapter 5 consists of the Limfjord fisheries history and the history of Halkaer bay's fishery, while chapter 6 is about agriculture. A review of the general agricultural history and its environmental effects is given, and it ends with a description of the agriculture in Halkaer Aadal.

Chapter 7 present the current fishery situation in the Limfjord and describes the effects of pollution on the fjords sauna. Then the present sauna and pollution in Halkaer bay is described and mapped to better understand the challenges towards sustainable development in the area and what the local habitants may do.

The fishery project's local institutions are described in chapter 8, to be able to find the local participation in Halkaer Aadal's three institutions. A part about the connection between the institutions follows this.

The discursions in the following chapters are circled around the vision of a local fishery in Halkaer Aadal. Chapter 9 to 11 look at the three institutions focuses. The different concerns in the choice of technology relevant for the fishery project are described. Chapter 9

starts by introducing the focus of the future economical institution in Halkaer Aadal. This focus is mainly on the technology more directly connected to the fishery. This will be done by using the four elements of technology as explained in the theory chapter. The focus is presented along with a discursion whether there are some local habitants who want to start a local fishery. The following discursion is about an eventual harmony between the transaction system and the Kolding manifesto. Chapter **10** is about the technology focus of the governmental institution, mainly agricultural technology, which is relevant for the vision of a fishery project. This chapter will examine whether it is the government that must decide for or against the possibility to re-stock the bay with fry. Another question is whether it is the government that must make the rules of quotas, when or how the fishery will be, and if it is they who must control it. This chapter also consists of a comparison of the focus and the Kolding manifesto.

The civil society's focus on technology is the contents of chapter **11**. The discursion in this chapter is concerned about the situation in Halkaer Aadal where the civil society wants a fishery. The question discussed here are: "Will the civil society demand locally caught fish?" and "Is the civil society as customers willing to pay more for a fishery with some fixed conditions?" The chapter ends with a comparison with the Kolding manifesto.

The thesis ends with a conclusion in chapter **12**, which first sums up the main focus of the thesis. Following comes the findings and some thoughts for the future.

1.3 Method:

1.3.1 Bibliographical research, e-mail correspondence, and cooperation

Bibliographical research is necessary to get the background information for the thesis.

My supervisors and some of my local informants have recommended the main part of my literature. Bibsys and Internet have been useful sources for information. This is a time

consuming method and due to the lack of available time there has been a limited search on the Internet and in libraries.

Informal conversations like e-mail correspondence have provided much important information. I have communicated through e-mail both before and after the period I stayed in Halkaer Aadal. The former correspondence helped me to prepare the interviews, while the latter has been a way to go more thoroughly into some questions and give me an up-date on the process.

Two parts of the thesis is, as mentioned, a joint product with my fellow students. They are also a part of the ESST specialisation at Aalborg University and they participate through their theses in the project of the EEA. We found it reasonable to cooperate with the same background information given that we are a part of the same project. However, the distance between us made it a little harder to cooperate, and most communication have been through e-mail correspondences.

1.3.2 Qualitative Interviews

The method of qualitative interviews was chosen to provide a deeper understanding of the actors and the situation in Halkaer Aadal. A qualitative interview involve, compared to the quantitative, fewer interviewed persons and conversations that goes more in the depth of the questions. However there are distinctions within the qualitative method too. The qualitative interview method I choice for the thesis is the most common type of face-to-face verbal conversation, except I choice to execute them in the field. The semi-structured method I used has questions that are somewhat directive⁷. Some of the questions are repeated in the different interviews, however many questions are formed for the specific informer, and many questions could be answered in detail. I tried to keep an open mind to the focus of my informers to

⁷ Denzin, Norman K., and Yvonna S. Lincoln (Ed.), 1994.

prevent my advanced understanding to block for new and important information. The interviews lasted from one to three ours.

I interviewed five persons while I stayed in the area: One municipal- and one county politician, one biologist who worked for the county, a local culture historian and idealist for the fishery project, and the coordinator in Halkaer folk association.

Some information may have been lost during the interviews and the conversations because of the Norwegian - Danish barrier. I had difficulties in understanding some of my informants, and I noticed that some of them did not understand me. To insure I got the most important information I repeated the questions in different ways and to other people.

1.3.3 Observation while living in the project area

I chose the method of observing while living in the area for a shorter period. These methods are similar to the main anthropological method: fieldwork and participating observation. I lived in the local community in the period 11.June - 22. June 2001. I did this to get to know the community, and to easily get in touch with the relevant informants. No detailed plan was created for the stay since I wanted to follow the action when it happened. This is also a method similar to anthropology. I also wanted to see if there were a difference in what was said and what was done. In the 11-days period, I stayed in a camping caravan outside Halkaer public house, and through that got an understanding of some of the local activities and atmosphere.

2. The Ecological Experimental Area in Halkaer Aadal

2.1 The idea of Ecological Experimental Area (EEA)

This presentation of the idea of EEA is based on Jan Holm Ingemann's (red) anthology from 2001⁸, the Halkaer report 2001 and the Kolding Manifesto⁹. The idea of EEA started in prolongation of a number of conferences, the last one at Kolding Hoeyskole: a Danish folk high school. Some of the participants grouped and developed the concept¹⁰. The idea of EEA is quite new and there is not much written about it. It originates from a discussion of technologies and their consequences. Technology is attached to risk. No matter what kind of technology is implemented there is always a chance of some kind of failure. Technology can be divided into risky and error-friendly technologies. Risky technologies are associated with centralized and top-down management. Error-friendly technologies are associated with bottom-up management that gives a democratic technology and take local diversity into consideration. The use of nuclear power is much more engraving than the use of wind power. The first can be associated to so-called big or risky technology, while the latter can be associated with small or error-friendly technologies. The discussion can be linked to disasters as the one in Chernobyl, but also to the systematic use of technological innovations in war. The idea that technology and politics are closely interconnected becomes clear in that discussion.

The idea of EEA is also a reaction to the last three decades' focus on the western lifestyle, of which we are part, and its influence on the natural environment. Several researches have showed that the population of western societies use more than their portion of

⁸ "Samfundets udviklingsafdeling – bæredygtig udvikling gennem eksperimenter", the societal development department – sustainable development through experiments.

⁹ A pamphlet published by "The network for Ecological Education and Practice – Denmark" and which also has been an inspiration to the idea of EEA's.

¹⁰ Members of this group was: Bodil Soegaard, Jan Holm Ingemann, Bent Hendrup Andersen, Steen Moeller, Jesper Saxgreen, Troels Dilling Hansen and Claus Heinberg. These people represent a plurality of backgrounds and educations, which will not be mentioned here, as this is not considered important in this matter. (Interview by Hilde Madsoe Jacobsen with Jan Holm Ingemann 03.08.01)

natural resources if the natural resources were to be equally distributed. Western societies should be organized in a way that promotes sustainability and this requires fundamental changes. The intention of establishing an EEA is to develop knowledge and gain experience about what these changes may consist of and how they can be implemented. There have been developed solitary sustainable technologies like windmills and composting. The next step is to link these technologies together, in order to create a technology system and to provide a societal framework that encourages sustainable development. In a limited area the aim is to design appropriate societal structures and institutions to support a sustainable society in ecological, economical, social and cultural terms. An EEA is a vehicle in this process. Charles Edquist and Bjoern Johnson have defined institutions as: *“Institutions are sets of common habits, routines, established practices, rules, or laws that regulate the relations and interactions between individuals and groups.”*¹¹ Structures can be defined as ways of how something is put together and organized, in this case the society, and the composition of the components involved.

The definition is not precise as EEA is a new concept. The idea consists of three elements; Ecological refers to an aim; Experiment refers to means; Area refers to a demarked area. The three words have equal weight.

- The notion ecological signalise both a problem and a possible solution to the present epoch where we face an ecological challenge. Humans have assumed power to interfere with fundamental natural mechanisms, which has lead to ecological problems and uneven allocation of natural resources both in time and space. In time because we are responsible of leaving our descendant resources. In space because there exists disparity in the consumption of natural resources between rich and poor countries. The notion ecological is used in its original meaning, which is the learning about nature's

¹¹ Edquist and Johnson in Charles Edquist (red) 1997, “Systems of innovation, technologies, institutions and organisations”, p46.

household. Nature's household is based on the idea of ecological circuit. The term ecological is important since the target of the idea is to create an easier interplay between various sustainable initiatives. The term ecological originate from the Greek words "oikos" and "logos". "Oikos" means household and "logos" means insight into or knowledge of something. In the ecology humans are part of Mother Nature and have insight into and knowledge of connections and processes within the eco-systems.

- The notion experimental refers to the idea of confirming or disproving hypotheses and ideas in an experiment. Nobody can on a pure theoretical basis show valid and universal solutions on how a society can be designed to be sustainable. Valid and universal solutions have to be searched for through experiments. Knowledge and experience about an appropriate design of a societal framework can be collected in such experiments.
- The notion area refers to the fact that experiments have to be accomplished in a demarked area. Partly because experiments including the whole nation might have unknown consequences, and partly because it would be easier within a designated area to do calculations and to be able to systematize, analyse and spread the experiences and knowledge gained from the experiment. The area needs to be exempted from certain laws to be able to carry out the experiments. This can only be done in a small area limited in space and time.

The composition of the three elements into one notion holds an important point. The goal is to obtain scientific knowledge about how a society may be arranged in a way so that the technological system and the societal structure in combination will support sustainable development.

The aim is to create knowledge about sustainable societies that afterwards is spread to other societies and then to the global society. In that way one starts to achieve the first

ambition, then realize further ambitions before ending up in a utopian society. The first ambition can be ecological sustainability, then perhaps social sustainability, and then global sustainability, before ending up in a new “utopian society”. When development towards one ambition is started new ambitions can be introduced. One has to start on a small scale for later in order to expand. Adjustments have to be made continuously. The aim is to create an EEA as means to work towards such a “utopia”, and its function is to be a dynamo for the ambitions and their realization.¹²

The Kolding Manifesto introduces the notion “dullards” as an expression for bottom-up responsibility and initiative. The activity within an EEA should be build upon public involvement and the public’s ideas about new strategies. The establishment of social activities, like EEA, may create a cognitive basis on how the society can develop in a sustainable direction. The idea of EEA is in accordance with the Agenda 21 program.¹³

The idea of EEA works best in well-functioning local societies. Local societies are usually in possession of economic and political strength.¹⁴ Those societies are primarily characterized with openness and a common identity, which can for example be developed and maintained through cultural activities. In the countryside the local society has traditionally played a central role as a factor of solidarity. Advocates for the idea of EEA have because of this pointed at rural societies as obvious frames for ecological local societies.¹⁵ In several rural areas there still exists a large extent of dynamics, which can represent a strong base of resources for EEA.¹⁶ Halkær Aadal in Denmark is such an area.

¹² The Halkær report 2001, ”the ambition triangle” p 25 and 26.

¹³ See chapter 3.1 about sustainability.

¹⁴ Ingemann, April 2001, p23.

¹⁵ Ingemann April 2001, p27.

¹⁶ Ingemann April 2001, p29.

2.2 The Ecological Experimental Area in Halkaer Aadal

2.2.1 The establishment of an EEA in Halkaer Aadal

Halkaer Tavern is situated in the river valley Halkaer Aadal. This is a place that is famous for its good ecological food and the folk music concerts. This event was started by a group of people who bought the house in 1992. The house carries a long story serving as a local merchant house with close connection to the former railway that used to go all the way out to the river valley. Today this is no longer the case, the railway was shut down and the old store was sold so the new owners have made this tavern the core of their Ecological Experimental Area. Today Halkaer Tavern is a cooperative of 85 owners, and it is possible for anyone to buy shares at a fixed rate.

The suggestion of implementing an Ecological Experimental Area in Halkaer Aadal came from Claus Heinberg¹⁷, who always looked upon this area as a geographically unique area. The River Valley is naturally demarcated geologically and topographically as it is a watershed area, and from a geologist's point of view¹⁸, it would be a good place to make a project of some kind¹⁹.

The serious pollution of the Northern Jutland fjord, Limfjorden, is one of the reasons for initiating an environmental project of this kind. The pollution is to a great extent caused by nitrogen (N.) and phosphor from the farming activities in the surrounding areas. This is however an issue of debate which complicates the affair of implementing the EEA. Halkaer Aadal is a watershed area, Soenderup River flows over in Halkaer River and they run all the way to the bay of Halkaer, which is a branch of the Limfjord. The amount of water led into the bay from this area is thus significant. The infusion of N. in the fjord causes destruction of the biological balance in, and along the fjord. The fish stock is being diminished; the

¹⁷ This is the writer of chapter two in "Samfundets Udviklingsafdeling", Ingemann et.al 2001. He is involved in the development of the concept.

¹⁸ As Claus Heinberg's view is.

¹⁹ Interview by Hilde Madsoe Jacobsen with Peter Soendergaard, 25.07.01.

population of mussels has almost been extinguished. In sum the entire ecological system is affected by the pollution.

Some of the people who started the Halkaer Tavern have long been concerned about the environmental conditions around them, and when they were presented to the idea of establishing an EEA they decided to act upon it. There are some people at Aalborg University, Centre of Environment and Development that in collaboration with other initiators, has developed the concept of EEA. In the mid-nineties a row of conferences on technology were held in Denmark. One of these was the Kolding conference in 1997. After this a group of people came together for discussing “free areas” as a mean to promote sustainable development through a process of trial and error. Peter Soendergaard, who is employed as a coordinator of the project in Halkaer Aadal, contacted Jan Holm Ingemann, member of the mentioned group, at Aalborg University. This sparked off the establishment of the EEA in Halkaer Aadal.²⁰

2.2.3 Facts about Halkaer Aadal

The project is situated at Northern Jutland in Denmark thirty kilometres west of the Danish city Aalborg. Three municipalities surround the area; these are Nibe, Aars and Stoevring. But the definition of the area of the EEA is determined by other criteria than the formal ones, which explains why the geographical boundaries of the area are crossing the ones of the municipalities. This is due to historical, geographical and cultural facts.

Culturally it's a matter of engagement in local concerns, this is expressed in quite a number of local associations that gives a degree of a common identity within this area. This common identity has historical roots due to the establishment of Skjoerbaek Ejdrup Free

²⁰ Information collected by Hilde Madsoe Jacobsen through interview with Peter Soendergaard 25.07.01 and talk with Jan Holm Ingemann 03.08.01.

School²¹, in the beginning of the twentieth century. There is also an extensive associative and business oriented collaboration among the four villages within this area. Geographically it has been mentioned that the area has a natural demarcation. In addition the geographical concern has also been influenced by the situation of the involved associations and people²².

Halkaer Aadal is a river valley west of Aalborg. Four villages are completely or partly included in the EEA; these are Vegger, Skjoerbaek, Ejdrup and Halkaer. Approximately 1000 people inhabit this area. In Vegger there are 350 inhabitants, Skjoerbaek holds 30-35, there are 40 in Halkaer, 35-40 in Ejdrup and the rest are living in the surrounding areas.

Most of this area is covered by cultivated land, 90% is used for agricultural purposes in general, and 70% is run effectively as cultivated land. The density of domestic animal is higher than the average density in the whole country²³. There is only a small space within this area that is not used for agricultural purposes. This is owned by the regional government, and is designated for nature- and leisure activities²⁴.

85% of the area on which we focus has been pointed out as a *vulnerable area of agriculture*. The regional government²⁵ directed this in 1994 in accordance with national- and EC- ambitions of reducing the amount of nitrogen and phosphor that is being washed out in the watercourse. The amount of nitrogen and phosphor being led out from the area within this watershed is fairly high and seriously threatens the environment²⁶. The arrangement consists of subsidies for those willing to subscribe to a change of management of their agricultural practice in order to reduce their use of nitrogen and phosphor. However submitting is not compulsory and thus only 150 ha. of land out of 1.248 ha. is run in agreement with this

²¹ Nicholai F.S. Grundtvig inspired and envisaged the foundation of the Danish Folk High School and Free Schools. The idea that the commoner should have an opportunity of getting a meaningful education constitutes the ideal of the establishment of these schools in the middle of the 19th century. ([Www.folkehojskoler.dk/old/int/side47.htm](http://www.folkehojskoler.dk/old/int/side47.htm)).

²² Ingemann, April 2001.

²³ Ibid.

²⁴ Interview by Hilde Madsoe Jacobsen with Gustav Scaarup and Jens Ove Bisgaard 09.08.01.

²⁵ The governmental structure in Denmark is divided in to three areas of management; municipalities (local), regional government (regional), government/the state (central)

²⁶ Ingemann, April 2001:60.

arrangement. The current agreements mostly cover small areas along the river and many of them were already before run in an environmental friendly way²⁷.

It should also be mentioned that the main part of the EEA is defined as rural area, and the regional government possesses the planning authority. This has different implications. Rural area regulations cover rules about house building; where and how to build. There are regulations for use of materials. You cannot build wherever you want at your own property, and not for whatever purpose you would like. There are rules about enterprises, containers for manure, machine stations, wind mills, antennas, distribution of land compared to amount of domestic animals, garages, shops etc²⁸. These formal regulations could appear to be a barrier within an EEA because it may restrict the possibilities of experimenting with new ideas of for instance construction. Due to this it has been necessary to apply for exemption from a range of rules.

The average age of the people living within this area seems to be lower than the average age across the country. This is due to the high rate of young families with children living in this area. However there is relatively few within the age of 18-25 compared to the rest of the country, which probably is caused by the lack of educational institutions for higher education²⁹. The general income level in this area in 1998 was measured to be significantly higher than the general Northern Jutland average.

There are 25 firms within the EEA (agriculture exclusive) that together are holding 112 working places. All together there are 200 people who are performing their job within this area (including farming activities), this is around 40 % of the total workforce that counts 500 persons. This implies that quite a few commute to their work place.

The percentage of people working as leaders and receiving high salaries is relatively higher, and there is less unemployment compared to the rest of Northern Jutland. The general

²⁷ Ingemann, April 2001:59-60

²⁸ www.nja.dk/teknik/plan/praksis/landzone.htm

²⁹ Ingemann, April 2001:41

level of education is lower compared to the community of Northern Jutland, however the level of income is higher.³⁰

The vision of the project could be expressed at two levels, micro and macro.

The macro level is connected to the current environmental situation of the global society and the Brundtland definition of Sustainable Development. To develop a local sustainable society is a step in the process against achieving global sustainability. Think globally and act locally is the slogan of the international Agenda 21; Local Agenda 21³¹.

The micro level refers to the concrete project of Halkaer Aadal. The EEA is aiming at the sustainability defined in the Brundtland definition of sustainability. But at the same time the issue of rural development is included, and the people working at this project are obviously more concerned about their local society than the global. The EEA is thought to be a vehicle in the process of achieving complete global sustainability, which realistically works more as moment of inspiration than the actual goal of such a project. The EEA in the same way as Local Agenda 21, illustrates the need to start somewhere in the process of developing sustainability. New solutions for sustainable development in the rural areas will be tried out in the locally embedded interaction between production, authority and the civil society³².

Sub-Projects

There are some sub-projects that already have been started, while others still are on the sketch board. Three of them will shortly be described here, as they are the ones with most relevance for my colleagues and me in this report.

³⁰ All data must be considered according to its context. Numbers are from The Halkaer report (Ingemann, April 2001) and Ingemann 2001 (The recently published book).

³¹ See chapter 3.1 about sustainable development.

³² Ingemann, April 2001:11 and 25

The Job Generator

This sub-project was started February 2001 and the intention is to deal with unemployment through sustainable initiatives. The scenario is based on the thought that activity generates activity; by creating jobs one will contribute to solving a societal problem and at the same time strengthen a more extended use of local resources. All activities will focus upon how to utilise resources in a better and more rational way and the future goal is to make the different activities economically self-supporting. The positive results should function as vehicles of diffusion³³.

The Christmas Duck

This sub project has not been established yet. Pia Johansen at Aalborg University has developed this scenario, and the prospect is as follows:

*All households recycle their organic material. They give it away to a local farmer who uses this as manure for his/her fields. Each household will in return be paid with a duck for Christmas*³⁴.

The scenario is build upon careful calculation, and it considers three aspects of sustainability, ecological, economical and societal. In addition it's a project involving the public from the start provided that they are willing. It should be mentioned that there is a tradition in Denmark for eating duck at Christmas evening. This explains why payment is thought to be a duck.

The fishery project

The vision proposes a reestablishment of fishery in the Halkaer Bay. This provides that one reduces the infusion of N. and then stocks the fjord with fry. In sum this idea suggests the

³³ Ingemann, April 2001:66-69

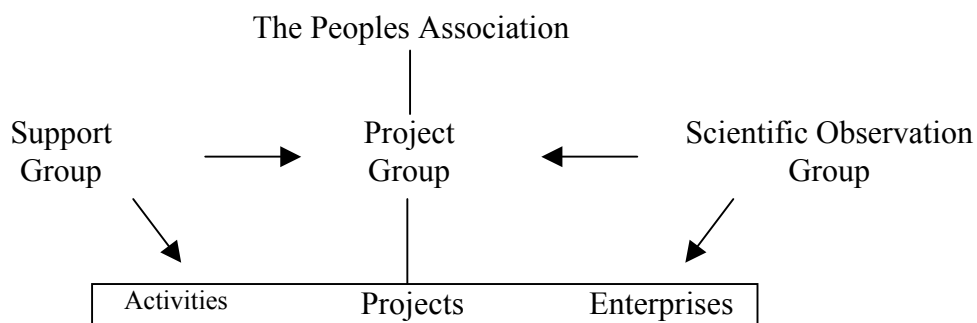
³⁴ Ingemann, April 2001:78, footnote.

creation of three working places, two within fishing, and there could also be an opportunity of starting a production of smoked fish.

Organisational Structure

The EEA is being carried by an organisational structure that is illustrated beneath.

The Halkaer Aadal people's association



This association was initiated as a point of departure for the establishment of an EEA. It was started in November 2000 as the core institution of the EEA.

The Project Group

This is at the same time the board of the public association; they play the role as an administrative unit of the project.

The support group

The support group is a group of politicians, administrators and experts who are giving feedback and inspiration to the project group.

The scientific group of observation

A group of scientists at Aalborg University observing the project, they are collecting and analysing experiences from the project, and at the same time serving as council of advice.

This group also fulfils a function as a communication partner giving feedback.

3. Theory

3.1 Sustainable Development

This chapter present and define the concept of sustainable development. The historical development of the concept is presented to show its increasing interest and importance.

3.1.1 What is Sustainable Development?

Sustainable development is both ambiguous and a popular concept. It grew out of the increasing awareness of a global ecological crisis during the last 30 years. Some of the massive problems aimed at are carbon dioxide emissions, poverty, deforestation, water pollution and large reduction in the biodiversity³⁵.

The concept of sustainable development is often divided into three dimensions: The environmental, economical and social. The integration of environment and economy happens by a change in the economical development by integrating a concern for nature. The concern must be inside the frames of the nature's limits. There are two main perspectives on how to integrate environment and economy, one is the environmental the other is the economical. The starting-point in the environmental perspective is the view of natural science on the ecosystems limits. The goal here is an economical growth with some fixed goals for the environment. This view may be called a "strong" sustainability. The "strong" perspective wants the whole ecological infrastructure to be preserved, and it is based on the rights of existence and development of non-human species and the whole natural system. The economical perspective has a starting-point in a thought of the environment as one of many goods, which together is the basis for human's welfare. This is called the "weak" perspective of sustainability, and the development is characterized as sustainable if the collected welfare

³⁵ Hajer, Maarten and Frank Fischer (Ed.), 1999.

is stable or increasing over time. The supposition for the “weak” sustainability is the possibility to replace environmental resources with other kinds of resources. The unsustainable use of resources is not as visible when other resources can replace them. The social dimension of the concept of Sustainable Development has not a similar prominent role as the economical and environmental dimension. The dimension is often about the work against poverty and development in the developing countries. However it is relevant in the more thoroughgoing change of production and consumption. This development may be for example health, quality of life, enlightenment, participation and behaviour. The social dimension can be divided into two parts. One is about the motivation force for development, like for example consumption patterns and population development, while the other is the social effect by different environmental initiative, like changed behaviour³⁶.

The Brundtland-commissions definition of Sustainable Development³⁷ is an example of a “strong” definition of Sustainable Development. Sustainable Development is according to the report defined as: *“A process of change in which the exploitation of resources, the direction of investment, the orientation of technological development and institutional change... enhance both current and future potential to meet human needs and aspirations”*. The Brundtland-commissions definition is popular. The economic dimension refers here to growth, equity, efficiency and competitiveness. The ecological refers to the ecosystems integrity, carrying capacity, biodiversity and global issues. While the third dimension, the social, relates to empowerment, participation, social mobility, social cohesion and cultural identity. All the three dimensions are viewed as important for sustainable development. The Brundtland commission’s definition is based on a very comprehensive research. They points especially at the following facts:

³⁶ www.eco-net.dk

³⁷ The commission for environment and development, (The “Brundtland-commission”), was established by the UN. The commission published the report “our common future” in 1987. For more about the historical development of the concept read chapter 3.1.2.

- The use of non-renewable resources is too large. The next generation's resources for life are destroyed by the current generation.
- Pollution is threatening the current and especially the future generations essential conditions.
- The developed countries are characterized by over-consumption, while the developing countries by hunger and poverty.

Based on these facts there are four suppositions for sustainable development:

1. There should be a larger production but by less resources. This supposition points at a saving of the non-renewable resources and a more effective use of resources. Pollution is viewed as lost resources. There has to be a change in the resource use in our part of the world, which demands technological change.
2. The population growth has to be reduced.
3. There has to be a re-distribution from the over-consuming to the poor.
4. The development must replace the growth in the material consumption with qualitative growth.

3.1.2 The historical development of the concept

UN's first environmental conference about sustainable development took place in **1972** in Stockholm. The meeting was concerned about environmental problems caused by the industrial countries.

UN established a commission for environment and development in the mid-eighties, the so-called "Brundtland-commission". This commission published the report "our common future" in **1987**. The report concerns how the environmental resources are being exploited

and it states that the road towards sustainable development is through new and environmental friendly technology.

The Ministry of Environment and Energy in Denmark followed the work of the Brundtland-commission by developing a national plan of action in **1988**. The plan stressed on LA21.

The United Nation's Conference on Environment and Development (The Earth summit) in Rio de Janeiro in **1992** is UN's second environmental conference. This conference continued the work of the Brundtland-commission, and is seen by many as the most essential conference by UN. 170 countries participated. The result of the meeting was the RIO-declaration, with 27 principles, and "Agenda 21", an action program for the 21st century of how to attain sustainable development. "Local Agenda 21" is a concept within the action program and is based on chapter 28 of Agenda 21. LA21 urges local authorities to implement the idea of sustainability in each community by cooperation with the local population and by including economic and social factors together with environmental ones. LA21 is developed by means as enhancing public participation, providing public information and providing financial support to activities initiated by citizens and organisations. Denmark followed up by introducing LA21 in **1994**. The Ministry of environment and energy encourage counties and municipalities to develop local Agenda 21. 84% of the Danish population were in 1998 living in active municipalities³⁸.

The UN general assembly in Rio in **1997** is the next on the agenda of sustainability. The intention was to map the environmental status since the 1992 conference. The UN general assembly found the global condition to have worsened. The global conditions are issues like poverty, population growth and global pollution. UN strongly encourages all countries to

³⁸ The Ministry of Environment and Energy. Denmark spatial planning Department. 2000.

develop national strategies for sustainable development by the year 2002, after the conference³⁹.

The Nordic countries declared a common strategy in January **2001**, and Denmark developed their national strategy the same year. A common strategy for EU is under progress. There was a EU-meeting about the strategy in Göteborg in June 2001⁴⁰.

The next on the agenda of Sustainable Development is the World summit on sustainable development in Johannesburg 2002, also called Rio+10. The purpose is also this time to summit the environmental status after the Rio conference in 1992.

3.2 Institutional Change and development towards sustainability

This chapter describe an economic theory that lay press on institutional change, which is an element in the Brundtland-commissions definition of Sustainable Development⁴¹. The theory will be used in the thesis to explain and locate the EEA's local participation.

The theory tries to identify the institutional cause of unsustainable behaviour and how institutional change may encourage sustainable development. The concept of "institution" describes patterns of formal- and informal behaviour, social conventions and organisations that affect human behaviour. The theory claims that the product of billions of people's decisions is the underlying cause to unsustainability. People's values, customs and norms are taken into account along with property rights, culture, religion, and economy. These are factors that affect people's decisions⁴².

The economic analysis looks at three fields of practice, these are: the transaction system, the empowerment system, and the government system. These institutions are believed

³⁹ <http://www.johannesburgsummit.org/default.htm>

⁴⁰ www.eco-net.dk

⁴¹ Opschoor, Johannas B, In R. Constansa et.al.1994.

⁴² Ibid.

to capture all the relevant environmental social interactions. Inadequacies in any of these fields to taking sustainability into account are labelled as institutional “failure”. The theory says that it’s unnecessary to wait for political resolutions or new technology to promote change. Changes can be made from the local homes and the local community with the existing technology. Activities are believed to make the local communities become more sustainable, which is a thought similar to the idea of the ecological experimental zone.

The transaction system

People are producers, consumers, and buyers and sellers of goods and services in the economic institution. Production and trade appears at this institutional level and the system covers in general non-governmental and governmental organisations. The social forces that influence the transactions are found in the institution of " social empowerment".

There are three main kinds of transaction failure:

- Market system failures. This includes inefficient markets and absence of markets. The markets coordinate the decisions of billions of people on allocation of resources. Issues as inequity and distance are often relevant. Distances in time, space or scale results in the inefficient markets. The individual’s influence and the level where the problem must be addressed for a solution may for instance have a level difference. Another example may be the large distance between the source or agent causing the problem, as pollution, other people, future generations or other species that must deal with the consequences. The absence of markets for ecological goods is often the case. In this case there may be an absence of rights or means to exert countervailing power.
- The next kind of transaction failure is negotiation failure for non-market transactions. The fault here may be missing representation of all stakeholders or there may be an

imbalance in the bargaining power. For instance stakeholders for future generations and other species may be overlooked.

- Preference failure, the third transaction failure, results from either inadequate knowledge or information among the stakeholders, merit goods, incomplete preferences, or time preferences bias.

The Empowerment system

This is the institution of the civil society where people are members of families, associations, parish, neighbours, friends, or have another social network that is not economical or political.

The institution includes the formal and informal counter-vailing power. An example of a formal counter-vailing power is the right to vote. Empowerment failure may occur at both non-governmental and governmental level. The empowerment failures may be caused by lack of social mobilisation to enable negotiation or missing or inadequate power. Authorization failure may also cause this, along with demand side market manipulation or a lack of mandate at governmental level to exert counter-vailing influence through policies.

The Government system

This institution covers the political field where people are voters and some are politicians and managers. The elected administrators make the frames for our lives. However, both voters and politicians can promote sustainable development. This institution consists of the Government and the state. The institution is separated into three categories:

- Missing intervention policies and social mobilization policies to address unsustainability. The government may here have failed in correcting or intervening in the institutions of transaction and empowerment.

- Intervention failure. Failure in the intervention itself caused by inappropriate target setting, lack of instruments, inadequate mandate or failures related to policies in other sectors may put less weight on the environment. The strategy of (re) defining and allocating the private- and collective- property rights could mean beneficiaries for all relevant actors, also future generations and other species. There will be a change in the rights of access and use of the environmental scarcities.
- Administrative failures. An administrative approach may be at an inappropriate level of intervention, either too low or too high. However, even if the level is correct, the approach may not be used correctly. Lack of coordination or integration that otherwise would have led to spillovers to other sectors may also effect. Bureaucracies can also suffer from a "time preference", as short-termed preferences, and they may be oversensitive to present purchasing or voting power. Strong voices in other sectors may affect the government in addressing the environmental problems raised due to agricultural development. However, government action is needed when there is a distance problem in the other institutions⁴³.

3.3 The concept of Technology

This chapter is a survey of the concept of technology. The broad definition, which is presented in the end of the chapter, will be used later to describe differing concerns in the three institutions in their choices of technology.

The notion of technology may be defined in many ways. The first definition is an example of a scientific definition, while the second is a more general definition by the field of anthropology.

⁴³ Opschoor, Johannes B, In R. Constans et al. 1994.

"Technology is the application of scientific knowledge for practical purposes; the employment of tools, machines, materials, and processes to do work, produce goods, perform services, or carry out other useful activities."⁴⁴

"Technology is any use of objects by humans to do work or otherwise manipulate their environment"⁴⁵.

To understand the concept of technology it is useful to go more thoroughly into its contents and processes. Following is a broad definition of the concept of technology⁴⁶. The definition divides the concept into four main elements; Technique, Knowledge, Organisation and Product, and the definition include both structure and process. The goal of the definition is to understand the connection between technology and society. A short version of defining the notion of technology is:

"Technology is used by humans as a source to re-create and expand their conditions for life. Technology consists of technique, knowledge, organization and product.

Following is a short survey of the four elements of technology.

Technique

The technique, which is the "hard-ware", is physical objects like tools and machines. As a process, technique can be all materials used in the production, even coal for energy. Human

⁴⁴ Morris (Ed.) 1992.

⁴⁵ Ibid.

⁴⁶ Jens Müller, Arne Remmen and Per Christensen, 1997, www.solidaritet.dk/, 15.08.01.

workforce is also a part of this component of technology as humans put the production into action and keep it going.

Knowledge

This component looks at people's knowledge about the use of the techniques. The component is also called "soft-ware". There are three important parts of knowledge: Know-how, know-why and intuition. Know-how is the empirical knowledge learned by experience, while know-why is the scientific knowledge. Intuition is the creativity and the tacit knowledge.

Organisation

This element is about the organising of the work process in different sub processes. The organising can be horizontal, vertical, technical and social. The horizontal sub processes may be done at the same time without much dependence, while the vertical are more dependent of each other and structured hierarchically. The structure of the machines and tools also decides some of the organization of the work. The social conditions are the need for administration through control and coordination of the work process, gender and communication.

Product

The product is the result of combination of technique, knowledge and organization. This result can both be material and service. There are several reasons for the importance of including product in the definition of technology; one is because the election of technique, knowledge and organization is intimate connected with the choice of the product. Often the product is selected first. It is also important to remember the quality and lifespan of the product and that it is a commodity. Money is connected to the commodity, and profit is often

the purpose and the rationale behind the production. The product also embodies knowledge helpful for future production.

Yet another definition and description of the concept of technology may be found in the Kolding Manifesto's "Viable technology", together with some living conditions.

3.4 The Kolding manifesto

The Kolding manifesto is an important statement for sustainable development at the grass-root level in Denmark. It views the area of technology as a place to start the process towards sustainability. The manifesto will be used in the thesis as an ideal for technology and the conditions for sustainable development in Halkaer Aadal. It will also be used to describe a possible difference in the concerns and choice of technology in the three institutions.

3.4.1 The Kolding manifesto's viable technology

The manifesto says that there are four basic sustainability elements: Democracy, social life, environment, and culture. These fields are connected, and ought to be dealt with together as each other's solution. The area of technology is a place where this process can start. There is a wish for an environmentally and resource-friendly technological development. This development must result in a meaningful democracy and it must re-anchor culture in everyday life. The rule is stated to be democracy.

Technology is defined as an inclusive term of technique, knowledge and organisation, and it should include the sustainability elements of democracy, social life, environment and culture. The manifesto states that we have a lot to learn from the past about viable technology. Shared ownership in for example production of butter and bacon gave the Danish society

superior quality, large incomes, modest prices and a vital democracy. Following is the manifesto's features of viable technology:

- It must be possible to remove the technology without irreparable consequences.
- The technology must respond to local conditions and be based on local resources, climate and soil.
- The remains of any technology must be used as raw materials for others. I.e. pollution is a waste of resources.
- All materials should be recyclable.
- Essential: It helps to stop the agrochemical industry from increasing wealth.
- The technology ought to call for democratic organisation and the scale and risk profile must be open to control by democratic bodies.
- The technological development must not reach dimensions and complexity where man or democratic bodies no longer can control it.

The manifesto states that involvement is the key in the process, and a way to involve culture may be for example to introduce harvest festivals, etc. There are many occasions to celebrate when all have joined in and done well.

3.4.2 The birth of the Kolding manifesto and its technology

The manifesto refer to the “numskulls”/ “simpletons” to save the world. The "eggheads" are the politicians, and they have already done too much harm. The simpletons are customary people who have many good ideas and try to solve the different problems. They make technology by turning to the simple truths and common sense and solutions that don't damage the world. The simpletons are, according to this, people in the civil society.

The Kolding manifesto became established, after several earlier conferences and discussions, at a meeting at Kolding Højskole. Approximately 100 people attended on the meeting on a talk about technology, democracy and sustainability in October 1997. The heading at the meeting was: *"Should the numskulls save the world, since the eggheads won't?"* They stated that it is time for the simpletons/ numskulls to act because the "eggheads" already had done a lot of harm. The Simpletons are folks that try to solve problems for the rest of us and for the future. They are not "smart enough" to save the world, so they don't risk destroying it either. The result of the meeting was the Kolding manifesto with the challenge of getting back to simple truths and common sense. The manifesto is a status report produced through a long-standing and multiphase communication and it starts up with 17 "self-evident facts". This is followed by the solution: "viable technology" and "responsible economics"⁴⁷.

3.4.3 Some "self-evident facts"

- "There is a limit to what Human's can be made to suffer since they are biological, cultural and social being's".
- "Human's has a right to search for happiness, but they have no right to destroy the planet Earth."
- "Our respect for common sense has to be reinstated, experience-based knowledge rehabilitated, and expert knowledge reduced to what it actually is, mere technicalities".
- "We need to develop technologies that will take us back to manageable types of risks."
- "Technologies have to be developed that allow and call for democratic administration practices."

⁴⁷ There will not be a further survey of the responsible economics in the thesis.

4. The vision about reintroducing a fishery

The vision about re-establishing a fishery is the case of this thesis and the discursions later in the paper will be based on this.

A local historian, who also is a member of the support group, introduced the first suggestion for a fishery project. A local fishery was viewed as a good idea by Halkaer folk association and the vision was presented in the first report from the EEA. The citizens currently behind the idea are Halkaer folk association⁴⁸, which is an umbrella for other unions in the area. The members are currently 12 interested individuals. These are also connected to the local unions and the congregation, and some are peasants.

The vision of Halkaer folk association is to re-introduce a fishery with the salmon “Helt” and Flounder. They hope for a minimum of two fulltime jobs for local habitants, and the possibility of one more workplace where the Helt is prepared before sale. The fish will be sold at a local market. There has been calculated that it is realistic to deliver fish to 300 households once a week for approximately 50 Dk⁴⁹, both regarding price and profit.

The association believe that a marginal change in behaviour can result in great sustainable change, which is the goal of the EEA. According to the association, two main actions may result in a fishery. First, there has to be a reduction in the Nitrogen pollution from the open land. Secondly, the association believe that stocking the bay with fry may create beginning of new life. They suggest stocking the bay with fry of Helt and Flounder. They also believe that the reduction of Nitrogen will result in more Eelgrass that may result in shrimps in the bay. According to the vision it may also be possible to reintroduce a fishery of shrimps.

⁴⁸ Halkaer folk association was established in November 2000 as an umbrella, which will coordinate all sub-projects in the area of the EEA.

⁴⁹ Dk. = Danish crowns.

However, there are today no concrete actions towards a fishery project. The folk association has to involve the local habitants first, and get their opinions and ideas about different local sub-projects⁵⁰.

The following chapter is a survey of the history of the Danish fjord fishery. This is presented because the vision talks about re-introducing a fishery in Halkaer Aadal and since it is mentioned several times in the report that there may be things to learn from history. The presentation is also background information that will, together with chapter 6 about the agriculture, create a better understanding of the current situation in the EEA.

⁵⁰ Interview with Peter Soendergaard, 20.06.01

5. History of the fishery

5.1 Fishery in Limfjorden

The Limfjord fishery had its time of greatness in the period between 1900 until the 1960`s. The industries mass production-idea came into the fisheries in the 1950`s and 1960`s. This resulted in new technology, which were larger and more powerful, for instance more powerful motors. The result was an excessive fishery in the 1960`s, which decreased. On top of this came the increasing pollution of Phosphor and Nitrogen, which ended the fishery in the 1980`s as the fish stock collapsed. From that time, the full-time fishery has been reduced to mainly oysters which is the only kind of fishery that has increased intensely the last 25 years, and the fjord is in additional used for sports- and spare time fishery⁵¹. The oyster`s fishery is plain, the technology is simple and there is no need for a large crew. The usual fishing technique for oyster is a ship that draws an oyster trawl, an iron-frame with an iron-net, over the bottom of the fjord. The ships pull up all hard objects like plants and animals⁵². The international market for oysters is good.

5.2 The fishery in Halkaer and the surrounding bays

The fishery in Nibe blossomed in the beginning of the 18th century. Around 20 families depended on the fishery. Added to the full-time fishermen were part time fishers and households fishers. The main catch was Herring, which also was sold to other communities⁵³.

The most important catch in the 1920`s and 1930`s were eel and herring. Eel was increasing in importance. Over 100 people were depended on the fishery to prevent getting below the starvation limit. People from all professions needed the fish, either for food on the

⁵¹ Fjordgruppen Nibe, 1993.

⁵² Northern Jutlands Amt; *“Limfjorden fra ende til anden – et togt med miljøeskibet ”Limgrim”*”.

⁵³ Fjordgruppen Nibe, 1993.

table or for an extra income. An illness in the eelgrass dramatically reduced the amount of eel in the 1930's. People had to supplement by hunting gees and ducks. The eelgrass is important for the manifold of species in the bays⁵⁴. Fish and other animals live in the areas with bottom plants, where they breed and eat⁵⁵.

There were 40-50 full time fishers in the area in the 1950's. They were catching eel, herring, flounder, Wolf fish, Eelpout, and Trout⁵⁶.

The reduction in the fishery started seriously in the end of 1960's and during the 1970's. Only 18 full time fishers were left in the bays. The eelgrass returned, but less than earlier because of the algae. The algae, which made the water green, prevent sunlight from shining down on the sea bottom. This results in the death of the seaweed and eelgrass, which is important for the life at the sea bottom. In addition, new technology is also to blame for the smaller amount of eelgrass, according to Nibe Fjord group. They blame the "bottom-dragging" technology, tugboats as eel trawl and "mussel-scrapers". The fishery collapsed in the end of 1970⁵⁷. There have been done surveys of the bays since 1986, where photos and films show the change in the three bays.

Concerning Halkaer bay, approximately 13 fulltime and 7 part-time fishers worked there in the 1940's, 1950's and 1960's. The main tool was eel bow-net since eel was especially important. The fishers got around 60 to 110 ton eel each year. However, this amount has been reduced dramatically since the end of the 1960's. Both the intensifying of the fishery and the pollution in the 1960's, which continued in the 1970's and 1980's, are reasons for that⁵⁸. Halkaer bay became permanently closed from mussel fishery in 1988⁵⁹.

⁵⁴ Ibid.

⁵⁵ Northern Jutlands Amt; *"Limfjorden fra ende til anden – et togt med miljøeskibet "Limgrim" "*.

⁵⁶ Fjordgruppen Nibe, 1993.

⁵⁷ Ibid.

⁵⁸ Ingemann, Jan, april 2001.

⁵⁹ Fjordgruppen Nibe, 1993.

The eelgrass in Halkaer bay died in 1986 because of the pollution, which caused the disappearing of most of the plant- and animal life. However, because of the work done by the three fjord county's⁶⁰ that reduced the Phosphor pollution to 3 ton pr. year, (a forth of the earlier amount), some signs of life appeared again in the bay⁶¹. A survey in 1993 confirmed that the bay's water quality was improving. The bay's water was more transparent and there were more animals and eelgrass⁶². The reduced pollution resulted in a large algae reduction. The sunlight got through to the bottom and made it possible for seaweed to grow.

However, the hot summers in 1994 and 1997, when the algae had especially good conditions for reproduction, caused the bottom too turn over. All new life in the bay died.

⁶⁰ The three counties are: Vigborg County, Ringkjoebing County and Northern Jutland County.

⁶¹ Ingemann, Jan Holm, April 2001.

⁶² Fjordgruppen Nibe, 1993.

6. Agriculture in Denmark

This chapter present the history of agriculture to better understand the current situation in Halkaer Aadal. The history is also reviewed because there may be current interest in learning from earlier societies and their technology. The chapter present the effects by agricultural pollution on the environment, and there will be a survey of the agriculture in Halkaer Aadal.

6.1 The history of Agriculture

The years between 1880 and 1920 has been described as a golden age for Danish agriculture. There was a shift from plants to livestock production, and Denmark had a rapidly increasing export of butter and bacon. “Co-operatives” that compensated for the lack of financial resources enabled the farmers to start dairies or slaughterhouses by them selves. The members paid the loans together, and the profits were divided proportionally. The co-operatives managed the production of farm products and supplied raw material to the farms. Ordinary farmers invented the co-operatives with the help of “mind-workers” as clergymen and teachers⁶³.

Parallel to this development were the so-called “smallholders”. Labourers and craftsmen constituted as a labour reserve for farmers and landowners as the craft and gardening could not support the families. Smallholdings enabled both the farm workers and the labourers and craftsmen to provide for their families. Clergymen and teachers helped the smallholders to establish associations⁶⁴.

The agricultural sector was large during the 2.world war. The production system was intact, but the technology was obsolete and worn. The agriculture still had wounds from the economic crisis in the 1930`s, and even though the period of war was an economic good period, they had no money to invest in new technology. The Marshall-help made the

⁶³ Ingemann, Jan Holm, 1999.

⁶⁴ Ingemann, Jan Holm, 1998.

modernisation possible, but this came rather late. The countries, which were in bits and pieces, got the help first. This was a large disadvantage for Denmark. The fast rebuild countries got a competitive advantage because they could produce with new technology in a period when Denmark still used obsolete and worn technology. The profession has been in a constant economic crisis ever since⁶⁵.

From 1951, there has been a development with a diminishing number of farms. Every year, until 1996, an amount of 3142 farms in average has been shut down. This is the same as 8,6 farms each day. In 1951, there were 205.835 agricultures in Denmark, with an average on 15 ha⁶⁶. While in 1996 there were 64.425 agricultures, with an average on 42 ha. The last four decades agriculture has had an income problem. The solution to this problem has been to increase the productivity largely.

The Danish agriculture production technology was once again rather worn out in the 1970's. The agriculture organisations and the political decision makers had a so-called “waiting-room politic”. The country waited for an admission in EU, which happened the 1. January 1973. Denmark was optimistic to the economical effects to the membership. Agricultures has become more specialised and concentrated after the admission in EU. The agricultural production in Denmark has increased, even though the reduction of farms. Investment in technology and use of industrial input has made the growth possible.

The peasants still have an income problem and the agriculture has become less meaningful for the Danish economy. On top of this the agricultural environmental problems have become more visible⁶⁷.

⁶⁵ Ingemann, Jan Holm, 1998.

⁶⁶ 1 Ha = 10.000 m².

⁶⁷ Ingemann, Jan Holm, 1998.

6.2 The environmental effects

Industrialisation of agriculture causes many side effects, like monoculture and large concentrations of few kinds of animals. Chemical based- manoeuvring and antibiotics are used to fight animal- and biological diseases, which occurs more often in these farms. It is proved that the use of industrial inputs has serious side effects on the environment, which results in economical expenses for the society in the long run. Denmark has an expense on approximately 9 billions Dk. each year because of the environmental effects, while the agriculturalist only can register the positive effects by using the industrial inputs. Agricultural industrial production is seen as the main cause to the environmental effects. The practice is not in line with the ecological principles⁶⁸.

6.3 Agriculture in Halkaer Aadal

There are 61 agricultural estates in the area of the Ecological experimental zone. This is an area of 1563 ha. Some of the properties are connected into larger farms. The total number of DE⁶⁹ in the area is 2246, that is the same as an average on 1,44 DE/ha. The numbers show an agricultural intensification in the area, compared to Denmark in general, which has an average on 1,29 DE/ha⁷⁰.

More than half of the areas DE are pigs divided between 10 peasantries. Four of these have only up to 30 DE, which means that there are six large pig farms in the area. One third of the DE is cattle. These are divided between 13 farms, where five of them have under 30DE.

⁶⁸ Ingemann, Jan Holm, 1998.

⁶⁹ DE stands for “dyre enhet” in Danish, which means “animal unit”. The number of animal’s pr. unit is counted by the amount of Nitrogen in their manuring. The starting point is that one large cow is 1 DE, while 8 sheep’s is 1 DE, etc.

⁷⁰ Ingemann, April 2001.

There is one ecological farmer among the cattle owners. Properties without domestic animals are relatively small⁷¹.

⁷¹ Ingemann, April 2001.

7. The current situation concerning fishery, fauna and pollution

This chapter presents the current fishery situation in general and specific in Halkaer bay. This is presented due to the importance of knowing what the present challenges for the habitants are in the area.

7.1 The present fishing in the Limfjord

The only fishery left in the Limfjord today is the Mussel fishery. This is the only economically viable fishery. The agricultural- and fishery county gave licenses for 51 mussel boats in 1995. Totally there were 75 fishermen, which caught a total of 100.000 ton mussel in 1994. Mussel fishery is economically attractive. Each fisherman has an income on 800000 Dk in average. Totally there are around 400 persons working in the mussel business. These are working in the refinement industry, as transporters, boat builders, and blacksmiths⁷².

The fishery in general has disappeared, except for part time- sports- and spare time fishers. The catches are heavily reduced, and the prices on fish have stagnated. The prices were pushed down by the competition with imported fish and fish from breeding. According to “Denmark’s fishery surveys” there are today no fishermen who believe in a future fishery. Even if the fish returns, the fish prices would force the fishermen to catch a huge amount of fish to get in economical balance. However, a fishery like that would be too much for the fauna in the Limfjord⁷³.

The part time- and spare time fishermen catch wolf fish, Garfish, Trout, Flounder, Eel, Plaice, Sole, Cod, Helt, and Turbot. The Sports fishermen, who are both tourists and inhabitants, fish both in the fjord and in the rivers for trout’s.

⁷² Hansen, Kirsten Monrad, 1996.

⁷³ Ibid.

7.2 Halkaer bay current situation

7.2.1 The fauna

Halkaer bay is south of Nibe. There is no professional fishery in the bay, only some sports fishermen. The bay has an area of five km and contents of 40% water from the rivers and 60% Limfjord water⁷⁴. The fresh water comes from Halkaer River and Soenderup River and three small streams. There are big varieties in the temperature and the Oxygen level, which result in frequent reductions in the fauna. The Oxygen-loss occurs in periods with a strong growth in the algae, high water temperatures in the summer and periods in the winter with freeze solid temperatures⁷⁵.

There were found 21 bottom species in Halkaer bay during investigations done in 1997. Founds shows during surveys from 1994 - 1997 that there are mostly mussels in the bay. More species are found at the autumn than during the spring. Sandgaper is the most dominating specie in the bay. It spawns when the water temperature becomes 10-15 degrees Celsius⁷⁶. These surveys had an interesting found by the mouth of Halkaer River, i.e. a large growth of Sandgaper, species previously found in small amounts. Another interesting observation is that the mussel in Halkaer bay grow faster than in Sebber bay. The higher amount of micro algae in Halkaer bay, which is food for the mussel, is believed to be the explanation. Another mussel found in the bay, which exists in a high amount, is the Spiny cockle. This mussel spawns from Marts and all through the summer. Other species, which exists in a much smaller amount, are for example “Easter sea- mussel”, Periwinkle, and crawfish⁷⁷. The fish that exists in the bay may be the same as fished in the Nibe area in 1995, this was: few Turbot, Eel, Cod, Eelpout, but many Trout and Herring.

⁷⁴ Ingemann, Jan, april 2001.

⁷⁵ Soerensen, Lone, 1997.

⁷⁶ Pfitzmeyer 1962, in Soerensen, Lone, 1997.

⁷⁷ Soerensen, Lone, 1997.

7.2.2 The pollution and its effects

There is still too much pollution in Halkaer bay⁷⁸. The main problem today is the increasing pollution of Nitrogen from open land⁷⁹. Much algae is caused by the high amounts of nourishment from the rivers. The content of Nitrogen is approximately 3000 microgram/litre in the bay in general, however there are around 8000 microgram/litre by the mouth of the rivers. In Nibe bay, as a comparison, there is 300-500 microgram/litre⁸⁰. The supply of Nitrogen is 5 times larger in the bay than usual on agriculture land⁸¹. Halkaer receive approximately 1000 kg Nitrogen pr. (ha) while normal agricultural land receives 100-150kg pr. ha.

The process of the pollution happens like follows:

1. High amount of nourishment flows into the bay.
2. The nourishment is food for small one-celled micro algae. The amount of algae increase when there is much nourishment and sunlight. The water becomes muddy and un transparent.
3. Oxygen-loss appears when the micro-algae die and start to rot at the bottom of the bay. The putrefaction uses a lot of oxygen from the water, especially on warm and calm summer days. There is approximately an amount of 10 mg pr. litre Oxygen in the water when it is saturated. Most animals die if the Oxygen level gets below 2 mg pr. litre. The “Oxygen-loss” occurs especially at depth below one meter, which include three thirds of Halkaer bay⁸².

⁷⁸ Andersen, Finn in Lone Soerensen, 1997.

⁷⁹ Northern Jutlands Amt; *“Limfjorden fra ende til anden – et togt med miljoeskibet ”Limgrim”*”.

⁸⁰ Ingemann, Jan Holm, April 2001.

⁸¹ Told by a county politician in a meeting 15.06.01.

⁸² Fjordgruppen Nibe, 1993.

4. Most fish manage to escape from the Oxygen-loss, but the life at the bottom dies if the Oxygen-loss keeps on for a longer time. This mostly affects mussels, snails, starfish, etc⁸³.

Weather conditions are crucial to the water condition and the life in the bay. Rain and snow bring quantity of Nitrogen from agriculture to the rivers and further to the bay. Hot summers with little wind cause, as mentioned, “oxygen-loss”, especially at depth below one meter. Calm weather makes the water separate into layers: the colder and saltier water at the bottom and the warm water above it. This blocks the way for new oxygen-rich water to reach the animals at the bottom, and there is a danger for “Oxygen-loss”. Therefore, *wind* is good for the water conditions. The waves mix the water layers and supply Oxygen to the bottom animals and fish⁸⁴. Some people try to help create Oxygen in the rivers, by driving there with powerful motorboats⁸⁵. The motors movement provide the water with some oxygen.

⁸³ Northern Jutlands Amt; “*Limfjorden fra ende til anden – et togt med miljøeskibet ”Limgrim”*”.

⁸⁴ Ibid.

⁸⁵ I observed this in Halkaer one warm summer day in June 2001, and was told about this earlier by Jens Oestergaard.

8. Institutions in the fishery project

In this chapter Halkaer Aadal will be divided into the actual institutions relevant for the fishery project, which is presented earlier in the thesis. Local participation in the institutions is found through this. There will also be a review of an eventual connection between the actual institutions.

8.1 Which institutions exist in Halkaer Aadal?

8.1.1 The Transaction system

This is the economic institution, where people acts as producers and consumers, and through that are sellers and customers of goods and services. However, there is still no institution like this in the fishery project, which still is a future vision. There is an absence of products i.e. fish from Halkaer bay and a local market for the fish. Today, people buy their fish from the local store, which import it from outside the local area. Accordingly to this, there are no local participants in the roles as producers, buyers and sellers yet in the fishery project.

Yet, there are plans to introduce an economic institution according to the vision, which will consist the production and the trade of fish in the local community⁸⁶. The potential market is among those that buy fish at the store. Helt, Flounder and maybe Shrimps are, as mentioned, the preferred product to be delivered to the local market. However, since this is still in the future, an amount of work has to be done before this system can be developed.

8.1.2 The Governmental system

This institution covers the political field where people are voters and some are politicians and managers. The elected administrators make the frames for the lives of the local inhabitants.

⁸⁶ For more about plans and focus of the future transaction institution, read chapter 9.

The voters, next to the politicians, can act to promote sustainable development. Below, there are some political forces that have an indirect or direct affect on the fishery project.

EU is involved indirectly through its policies to protect specific nature areas. Halkaer bay is defined as an International nature protection area, a “Ramsa” area, a EU- bird protection area, and a EU-habitat area. While, UN is indirect involved through its conferences about sustainable development and programs like Agenda 21.

Denmark’s government is directly involved through its cooperation with Halkaer folk association. The coordinator of the association mentioned that they have a better cooperation with the government than with the county and the municipalities⁸⁷. The government, through the Ministry of fishery- and milieu, is involved through its work to reintroduce a fjord with a rich and disparity fauna. They also emphasise on finding a balance between all involved actors, i.e. fulltime fishermen, spare time- and sports fishermen, environmental organisations, hunters, ornithologists, and environmental authority⁸⁸. Besides this the Danish government is involved in the area through policies to introduce “local agenda 21” in the municipalities and counties. Halkaer folk association view themselves as an umbrella for the “LA21”-policies⁸⁹.

Northern Jutland County is directly involved through policies to introduce “local agenda 21”, and the work that has to be done to prepare for a fishery and by having some members in the “Support group”. These politicians are personally interested in the fishery project. The County has also introduced purification-plants, which have resulted in large reduction in the Phosphor pollution, and they have policies to make voluntary environmental agreement with farmers. The conditions in the bays regularly measured by a county biologist. The county declared Halkaer Aadal as an “especially sensitive agriculture area” (SFL) as a step towards changing the amount of Nitrogen in the wastewater from the open land. The goal of the project is to reduce the Nitrogen pollution in the bay by 50%. One of the county’s

⁸⁷ Interview with Peter Soendergaard, 20.06.01.

⁸⁸ Northern Jutlands Amt; *“Limfjorden fra ende til anden – et togt med miljoeskibet ”Limgrim”*”.

⁸⁹ Stated on the business card to Halkaer folk association’s coordinator.

projects is relevant for the local habitants; this is the goal of making Halkaer- and Soenderup River become as they usually were, with curves and swings. The rivers will be located closer to the nature and float in their natural course. Drains that prevent floods will be removed so that parts of the land will be 10 cm under water in rainy seasons. The Nitrogen in the water will react with a substance in the earth and becomes Oxygen that is un-harmful for the air. However, to do this peasants have to give up their land close to the rivers. This strategy concerns the “MJA”-project, which stands for environmental friendly earth territory. The county has got a property further into the country, which they divide and offer to the peasants in exchange of the farmers land by the rivers. Negotiations are still in progress between the peasants and the county, even if the goal was to have the “SFL”-agreements by June 2001. Some farmers have made such an agreement, according to the county, however some agreements run out this year after a period on five years. The county hopes to get five new agreements this year⁹⁰. The County also offer peasants a compensation for reduced profit by acting more ecological. This has however not been interesting for the farmers due to the too low amount.

The goal of the counties cleaning plan from 1985, which was supplemented by a national water environmental plan in 1987, was to reduce the pollution to the fjord caused by industry, cities and agriculture.⁹¹ The former cleaning plan demanded strict changes for the municipalities since the purification-plants had to become much better to clean the waste from towns and industry. Within three years, they were supposed to reduce 90 % of the wastes Phosphor and 80% of the Nitrogen. The municipalities built and invested over three billions Dk. to meet the demand. The counties goal about reduction of Phosphor pollution is met, but there is still a problem with the Nitrogen pollution, especially from open land⁹².

⁹⁰ Meeting between peasants and Northern Jutland's County 18.06.01

⁹¹ Northern Jutlands Amt; *“Limfjorden fra ende til anden – et togt med miljøeskibet ”Limgrim”*”.

⁹² Ibid.

The inhabitants are also a part of the governmental system and the fishery project through their role as voters, local administrators and the “public opinion”. The folk association has 12 members that are, as mentioned, representatives for other organisations in the area. These local inhabitants are still in the beginning of introducing a fishery project. The project is still at the visionary level.

Accordingly to the above, the local participants in the governmental institutions are politicians from the County and the Municipality. These are involved in projects that prepare for a fishery, and some are involved more directly through their membership in the support group. Along with the politicians are the Halkaer Aadal inhabitants. The active participators among the inhabitants in the fishery project, in the roles as voters⁹³, are mainly the 12 members in the folk association and the active local experts in the support group. Yet, there are as mentioned many plans on how to include the rest of the local community. They will also be managers of their own local development by being included in the decision-making process.

8.1.3 The Empowerment system

This is the institution of the civil society where people are members of families, associations and parishes, and they are neighbours, friends, and have a social network that is not economically or politically based. In the social networks people’s decisions are influenced by their values, customs and norms. This institution contains the social forces that influence the transaction- and the governmental system.

Halkaer folk association and the rest of the local inhabitants in the area of the EEA is part of this institution. The 12 members are the most active in the vision of a fishery project, together with some experts participating through being members of the “Support group”.

⁹³ These voters may have a stronger focus on the goal of sustainable development in the local area and the fishery project.

However, these have a lot of other projects to take care of too, so the participation in the fishery project is still on the vision level. The rest of the inhabitants in Halkaer Aadal aren't yet participating in any manner, however the folk association are planning to inform, motivate and mobilise them, starting sometime during the autumn 2001.

The civil society's local participation in the fishery project is a strong force that is important to remember. The folk association, the support group, and some of these person's social connections are the actual participants in this institution today. Yet, there are many plans to use the local habitants social network to spread information and motivate the people in participating in the fishery project towards a local sustainable development.

8.2 Is there a connection between the institutions?

The government and the civil society are the relevant institutions to watch here. There still don't exist a transaction system in the fishery project.

As mentioned, there are some communication between the Danish government and some of the members of Halkaer folk association. This relation is described as better than the dialog and cooperation with the county and the municipality, which is explained in the governments more knowledge and money. The coordinator was for example surprised to hear about the meeting that took place between the county and the local peasants. He thought that it should have been natural to invite some members of Halkaer folk association⁹⁴. These two examples may show both a poor connection between the two institutions, but also on different levels within the political system. However, there are some dialog between the County and the folk association through the politicians who are members of the "Support group". Another example of a lack of or little communication is the dialog observed in the meeting between

⁹⁴ Interview with Peter Soendergaard, 20.06.01.

the peasants and the County politicians⁹⁵. The farmers are sceptical to initiatives from the County⁹⁶.

The following three chapters introduce the focus in the different local institutions. This focus is directed on the technology within the vision of a fishery, and is relevant for the cooperation between the three institutions on the local level.

⁹⁵ Meeting between local peasants and Northern Jutland's County 18.06.01.

⁹⁶ This was told by the county politician, Arne Soerensen, in an interview 15.06.01, and confirmed by a farmer attending at the meeting the 18.06.01. The farmer said he attended at the meeting as an opponent to the county and to provide a fair distribution of new farmland.

9. The technology focus in the transaction system

9.1 The focus connected to the fishery project

This chapter introduce the focus on technology in the future economic institution. The focus is mainly on technologies that are directly connected to the fishery project. Dividing technology into the four different elements: technique, knowledge, organisation and product, does this. The process aspect is also included as done in the broad definition of technology.

The chapter will have a discursion whether there are workers in the area that wants to start a local fishery. The question concerning demand of locally caught Helt and Flounder, and if they are willing to pay more for a fishery with some fixed conditions is another discursion. At last the different focus in the transaction institution will be compared with the Kolding manifestos principles for technology and development.

The most often mentioned points in the vision of a fishery are the wish for a minimum of two fulltime jobs for local habitants, and the possibility of one more workplace where the Helt is prepared before sale. The locally caught fish will be sold at a local market. There has, as mentioned, been calculated that it is realistic to deliver, both regarding price and profit, fish to 300 households once a week for approximately 50 Dk⁹⁷. The technology element “product” is here the locally caught Helt and Flounder, while the “organising” described in the vision is the dividing of work into two fulltime jobs as fishermen and one job to prepare the fish.

Concerning the organising, there is a wish to get local people to do the jobs. An important question here is: are there some local people in Halkaer Aadal that want to become fishers or prepare the fish? According to “Denmark’s fishery surveys” there are today no fishermen who believe in a future fishery in the Limfjord. They explain this by saying that even if the fish returns the fish prices would force the fishermen to catch a huge amount of fish to get in economical balance, which the environment wouldn’t manage. However, the

⁹⁷ Dk. = Danish crowns.

history told by the local historian⁹⁸, who has interviewed several fishermen's through many years, draws another picture. He described the hard reality for the fishermen when they realised that the fish had disappeared and so would their professions. Some fishermen changed their profession and others still fish but now at the coast. These moved from their homes to continue the work they love to do. However, there are still former fishermen living in the area, among those that changed their profession, who dreams for better times. Their comfort is the thought from the bible: "Seven lean years will be followed by seven good years"⁹⁹.

Yet another important aspect concerning the element of organising is the work of administrating the fishery project. The vision consists of barriers like the economy, the environment and the laws. The fishery projects barriers are, according to the coordinator in Halkaer folk association, a job that is waiting for someone who burns for the vision to pick it up. He also says that, to start the fishery project, there may be a need for a fulltime employee as a planner and a "barrier-demolisher" for at least a year¹⁰⁰.

The second element mentioned above, the product, is as mentioned Helt and Flounder that will be sold at the local market in Halkaer Aadal. Shrimps may also be a product if the environmental condition in the bay improves and the amount increases. The vision focuses on being self-sufficient on fish. The definition of the technology element "product" says that money is connected to it. According to the visions focus it is important that the workers earn enough to support themselves and their families.

An important question concerning the product is the wishes of the customers. Today the local people can buy their fish, smoked or non-smoked at the local store. Will the people as customers pay more for fish with some fixed conditions? This is a question important for the local participation of the citizens. It is valuable to compare with the development on

⁹⁸ Jens Oestergaard, one of the thesis's informers, interviewed 15.06.01.

⁹⁹ Interview with Jens Oestergaard, 15.06.01.

¹⁰⁰ Answer with Peter Soendergaard on an e-mail questionnaire, 21.08.01

agricultural products. The ecological products, which are produced with some fixed conditions, are still more expensive than the non-ecological. Often customers are drawn towards the less expensive products¹⁰¹, however there is a development in Denmark towards people getting more concerned about the production process and how, for instance, the animals are treated. Will this also be the case concerning the locally caught fish in Halkaer Aadal? It may. The folk association's focus on teaching and informing the local habitants may create such a development. Quality is also an issue. Customers prefer fresh fish, which is the case with locally caught fish.

Another focus concerning the customers is the obstacle in people's heads¹⁰². The coordinator said that it is easier to say no than yes to new things, as in this case the vision of a local fishery and everything new that concerns it. However, this barrier may be broken by information and learning, according to the coordinator, given that education broadens people's perspective on things¹⁰³.

Another issue is who has the knowledge about the products and the economy around it. This brings us to the next element of the definition of technology, the knowledge. The vision and the report mention nothing about who and where persons with the different kind of knowledge may be found. It is important to cover "know-how", the empirical knowledge, "know-why", the scientific knowledge, and the intuition, which are the creativity and the tacit knowledge. The vision however focuses barely on the "know-how" of earlier fishermen. The vision is only concerned about the know-how regarding the techniques used before the industrial fishery. These techniques may be thought from the earlier fishermen. This brings the fourth element of technology into focus, the technique. When looked at as a process technique includes all materials used in the production. The report shows however a small focus from the transaction system on the elements "technique" and "knowledge". There is

¹⁰¹ The price difference on ecological and non-ecological products in Denmark is not as large as in Norway.

¹⁰² Interview, Peter Soendergaard, 20.06.01

¹⁰³ Ibid.

only a focus on the historical techniques and the earlier fishermen's knowledge. What about knowledge of the new technique like the technique of stock the bay with fry of Helt and Flounder? This is not brought up, neither is it mentioned who has this knowledge, what kind of techniques that may be used and who are willing to teach others what they know.

9.2 Is the focus in harmony with the Kolding manifesto?

The economical institution focuses will in this chapter be compared with some of the Kolding manifesto's claims and principles. These are viewed as an ideal and the goal towards sustainable development.

One of the manifesto's claims is that technology must respond to local conditions. The economical aspects of the fishery visions fulfil this claim. The visions focus on workplaces for local fishermen in Halkaer bay, and it focus upon a local preparation of fish and the sale at a local market. However, the manifesto says that the technology ought to be based on local resources. Concerning the fish, there is no resource like this at the current time. Yet, there is no harm done to nature to reduce pollution and to stock the bay with fry. To reduce pollution answer very well to the conditions in the manifesto since it improves the environment. Pollution is also claimed to be misuse of resources. The technology of stocking the bay answers for the manifesto's claim of no irreparable consequences. The fishery projects technology is also intended to be relative simple, which is in accordance with the manifesto's principle about making sure that the technological development doesn't reach dimensions and complexity where man or democratic bodies no longer can control it.

The economic aspects of the fishery project will be based on a democratic organisation, which is an important aspect of the manifesto. Halkaer folk association will manage the project, and they have many ideas of how to create a broad participation in the

rest of the local community. This is of course still only on paper, and the actual result may become different than planned. Summarised, it may be said that the focus on the fishery project in the institution of transaction is, in theory, in accordance with the principles of the Kolding manifesto.

10. The political institutions view on technology

The political institution contains the Danish Government, Northern Jutland's Count, municipalities, and the habitants through their roles as voters, the force of the public opinion and as local administrators. Chapter 8.1.2 presented the actual political institution in Halkaer Aadal, while the following chapter will introduce the institutions focus on technology that is relevant for the fishery project. The government's responsibilities will be examined in this chapter. The discursions will be about who make the rules of fishing quotas, when or how the fishery will be, and if it is the government that must control it. Additionally will there be discussed whether it is the government that must decide for or against re-stocking the bay with fry. At last, there will be a discursion of the focus compared with the Kolding manifesto.

10.1 The focus of the political actors

Internationally, there are sustainable initiatives and regulations by the UN and the EU. The UN shows a focus towards sustainable development as defined by the Brundtland-commission, while EU shows a focus on especially vulnerable environment through its strategies to protect specific nature areas with its particular plants and animals. Both look at local areas, for example UN's LA21 program, which affects Halkaer Aadal.

The focus of the Danish government is visible through its involvement in introducing "LA 21" in the municipalities and counties, where it is the development in local areas that is especially important. The cooperation between the Danish government and Halkaer folk association also display this interest. The Ministry of fishery- and milieu's goal of reintroducing a fjord with a rich and disparity fauna show their focus.

The Ministry decides where to fish, the quotas and who's allowed to fish. The mussel fishery shows a decision concerning where to fish. The Danish government has closed areas,

like Halkaer bay, for this kind of fishery due to the environmental conditions as described above. This shows a focus towards protecting especially environmentally sensitive areas. The question of amount may also affect the issue of how to fish. The fishery techniques, one of the elements of technology, might be an issue. There is a focus towards the techniques that is used: Example are the oyster trawl used in the oyster fishery, which destroys the bottom fauna, and large ships used before that got large catches and which resulted in “over-fishing”. A focus here by the Danish government is to create new and more environmentally friendly fishing techniques. There are also decisions about quotas. However there are little focus on whom that is allowed to fish. The Danish government wants to please all actors interested in a fishery and try to make a balance between these actors.

It seems like the focus of the Danish government mainly are on the “technique” element of the definition of technology. The organising of the work will be a part of the “who can fish”- question. The elements “product” and “knowledge” isn’t mentioned much.

However does it have to be the Danish government that decides all this questions? And is it them who must control a fishery in Halkaer bay? Not necessarily according to the following. A requirement within the ecological experimental area is to get an exception from some of the existing societal rules and norms. This is essential for the local political forces, and gives them the necessary authority that makes it possible for them to solve different tasks. An important question here is whether the Danish government will give this authority to the people in the ecological experimental area, or not.¹⁰⁴ On the other hand, are the local people as managers competent enough to make these decisions? The folk association has a focus on the lack of knowledge in the area¹⁰⁵. However, the association receives advices and suggestions from the “support group” and the University of Aalborg. Although, are all the relevant fields of knowledge for a fishery project represented through the experts? The

¹⁰⁴ The suggestion of an “Ecological experimental area” in Halkaer Aadal is given to Northern Jutland’s County. An answer was expected during the summer or autumn 2001. Told in interview by Peter Soendergaard 20.06.01.

¹⁰⁵ Told through e-mail correspondence by Peter Soendergaard, May 2001.

support-groups organisation plan shows that there are six local politicians from the County and the municipalities, three members from the university, three that are connected to agriculture, four that are interested in the nature in general, and two that are connected to Halkaer bay more directly, etc. The number of politicians may show a focus towards the importance of politics done by the County and the municipality, and the organising shows a strong focus on the environment given that at least ten of twenty people of the support-group have a focus on the environment. Only two among these are directly focused towards the bay. One of them is a member from the “Fjord-group”¹⁰⁶ and the other is a biologist hired by the County. None of the experts covers the knowledge about stocking the bay with fry, which is very relevant for the fishery project.

As mentioned, there are six local politicians from the County and the municipalities in the support group. The focus of these politicians is important for the advice’s they may give to the folk association. Northern Jutland County in general show a focus towards the environment by having declared Halkaer Aadal as an “especially sensitive agriculture area” (SFL). This is done with an especial focus towards the amount of Nitrogen from agriculture to the bay. Also the “nature-recovery” project in the area and the project of making Halkaer- and Soenderup River get back their curves and swings¹⁰⁷ show a focus upon the agricultural pollution. The political informers of the thesis have a focus towards the esthetical concerning the fjord and for a rich fauna. They also focus upon workplaces, however they pointed out that this was an issue for the future¹⁰⁸.

The county’s strategy of dividing a property, and offering new land to the peasants further into the country in exchange of their land by the rivers, is not necessarily an easy task.

¹⁰⁶ This is my informer Jens Oestergaard who was the first to suggest a fishery project in the EEA.

¹⁰⁷ An interesting aspect relating this project is that the rivers will, according the coordinator of the folk association, eventually get back to the natural state by it self since the earth gradual is sinking.

¹⁰⁸ Interview with the municipality politician Mogens O. Madsen, and the County politician Arne Soerensen, 15.05.01.

The farmers are sceptical to initiatives by the county¹⁰⁹ and the communication is not as good as it ought to be¹¹⁰. A solution to the pollution problem should have some kind of gain for the farmers. What do the farmers want? Money may be an important aspect. The importance of money for some of the farmers is for example visible in their cultivation of land all the way down to the rivers. This practice is unpopular by several of the active persons in the project of the EEA¹¹¹, and it is not practice within ecological agriculture. The industrial farming especially the huge pig farms in the area may show through size and production methods a focus on surplus.

There is no focus on the fishery technology more directly by the county, like the technology of stocking the bay with fry. The politicians said, as mentioned, that this is a thought for the future and that they have to be concerned with the current issues, which is the agricultural pollution¹¹². The practice of stocking the bay with fry is used in other counties in Denmark. This has been successful according to some county sources. However a local informer explained the policy as a strategy where the source to the pollution isn't removed and as a strategy that get rid of the bad conscience¹¹³.

Yet, it isn't necessarily only the Danish government or the local politicians that can take a position for or against if it is possible to re-stock the bay with fry. The Danish government, the County and the municipalities are all working towards introducing LA21, then it would be natural that they also trust the local habitants in administrating the fishery project. New knowledge, information and the cooperation and advise from experts can help the individuals to administrate the stocking of the bay. Local administrating is also one of the goals of the EEA, and a reason why they apply for being an exception from some of the societal rules and norms.

¹⁰⁹ Interview with Arne Soerensen, a County politician, 15.06.01.

¹¹⁰ Observation in a meeting between peasants and the County 18.06.01.

¹¹¹ Information through different informal conversations while living in Halkaer, 11.06.01 – 22.06.01.

¹¹² Interview with County and municipality politicians, 15.06.01.

¹¹³ Interview with Jens Oestergaard, 15.06.01.

10.2 Is the political focus in harmony with the Kolding manifesto?

There seems to be a general strong focus on protecting the environment in the governmental institution. This is in harmony with the Kolding manifestos principles. The focus on the local administration is in accordance with the manifesto that has democracy pointed out to be a key in the sustainable development. The focus on developing new and more environmentally friendly techniques appears like being in harmony with the manifesto, however it isn't necessarily so. The Kolding manifesto has many demands to sustainable technology, and different actors interested in the fishery isn't necessarily agreeing with all of them. So far, there are no plans expressing what kind of new fishery technology that will be used.

The county plans of making the rivers return to its natural state is in accordance to the Kolding manifesto. They believe in common sense and simplicity, and it is common sense to let the nature take care of the pollution by getting flooded in a shorter period. However it would in a way be even more common sense to wait until the earth sinks and reach a level that naturally makes the rivers go over its banks.

Another focus concerning the agricultural pollution is the Kolding manifesto thought that pollution is a waste of resources. One literary source by the county mentioned something about using the pollution, however when the politicians were asked about this they had nothing more to say. The County or the municipalities have done nothing more about it¹¹⁴.

When the project of the EEA is more active and the vision of a fishery is a practical project it may be easier to describe the initiatives as being in harmony or not with the manifesto. Yet, in accordance to the plans and current practise it seems to be a harmony between the two.

¹¹⁴ Interview with County and municipality politicians, 15.06.01.

11. The civil societies focus on technology

This chapter view the civil society's focus on the technology elements that is relevant for the fishery project and the institutions strategies towards an increased participation.

Halkaer Aadal folk association, with their 12 individual members who also participate in other organisations in the area, have a focus on creating a social and cultural fellowship that is locally anchored around different projects¹¹⁵. This also concerns the fishery project, which is mentioned as one of many sub-projects. The vision describes culture to be mainly around the fishery profession. However, the society's anchor is described in general to be around creating workplaces, lodgings, and common initiatives. These are in accordance to sustainability, which create more life and holism in the local area. The relevant points in the institution of the civil society, which is a task of the fishery project, are the creation of more life and holism around the thoughts of sustainability. The social dimension of the Brundtland commission's definition of sustainable development, which is relevant here, are the elements of health, quality of life, enlightenment, participation and behaviour. Both parts of the social dimension are relevant. The first is about the motivation for development while the other is the social effect by different environmental initiatives, like changed behaviour¹¹⁶. There hasn't been much focus on the health issue¹¹⁷, however all the other elements are very relevant.

The quality of life is a goal within all aspects of the sustainable development in the local area and may be created by a positive and collective identity in the EEA. The coordinator mentioned that it would be better with a local identity connected to a practice the habitants are proud of instead of the current identity of a stork. The further focus of the

¹¹⁵ Ingemann, April 2001.

¹¹⁶ www.eco-net.dk

¹¹⁷ I asked the County biologist about this. He barely told me that a few people had got sick by the drinking water, however he emphasized that it was an exception. 15.06.01.

association is on doing practical things, this can be anything as long as the local people are connected and cooperate in it¹¹⁸.

There is a strong focus concerning the enlightenment and the participation of the local individuals by Halkaer folk association. The coordinator talked much about how to motivate and mobilise the people in different projects. Information might be given through a local advertising paper that the habitants read very accurate, and a wagon is thought to travel around the area with information and lectures to the local people. 25 key people will also be picked out to deliver information and knowledge through their own social networks¹¹⁹. The thought is that the local habitants will participate in the different projects, which will change their behaviour towards a sustainable practice. This is a very relevant focus for the fishery vision.

However, will the civil societies participation in this project change the practice in the bay towards sustainability? It might through the work of enlightening and teaching the local people. It may be important to include the local peasants, especially the pig farmers, to answer this. An impression is that they are becoming the “black sheep’s” in the area¹²⁰. However there is a focus in the folk association of including them by talks. The association wants to un-mystify their work and to make the farmers understand that the association’s sustainable initiatives are not a threat to them¹²¹. The coordinator said he is going to contact them and have a conversation at for instance Halkaer public house. Another practice that shows this focus is that one of the members of the folk association’s management¹²² has started a dialog with a group of younger peasants in the area. The dialog is about the agricultures handling of nourishment and the conditions in the fjord. The association also has contact with professor

¹¹⁸ Interview by Peter Soendergaard, 20.06.01.

¹¹⁹ Ibid.

¹²⁰ Observed while living in the area through informal conversations, and an impression through reading different literature received by some informers.

¹²¹ Interview by Peter Soendergaard 20.06.01.

¹²² Preben Drastrup. A regular farmer.

Joergen Primdahl from the “Royal Veterinary Agricultural School”¹²³. The goal of this contact is to organize a dialog with the peasants with the starting-point in the peasant’s wishes, visions and their need of exploiting their land¹²⁴.

When viewing the civil society’s focus by using the definition of technology, one may say that there is a main focus on the element of organising. The first steps are taken in the area in these days to include and mobilise the local individuals in the projects.

The focus in the institution of the civil society is in accordance with the Kolding manifesto, which is the base of the idea of the EEA. The goal of creating a locally anchored social and cultural fellowship, which concerns the civil society, is one of the key points both in the EEA and the manifesto.

¹²³ Den Kongelige Veterinaere Landbohøjskole.

¹²⁴ The information is from an e-mail questionnaire by Peter Soendergaard, 21.08.01.

12. Conclusion

12.1 The focus of the thesis

This thesis focal point is a vision about a fishery project, which is a means towards sustainable development. Local participation and the abilities to contribute towards sustainable practice in Halkaer bay is the centre of attention. A question is: do the behaviour of the local populations change towards sustainable actions by participating in the fishery project? The local participation is found by dividing the society into three institutions: The economic, the political and the civil society. These focus of these institutions have been viewed and they have been compared to the Kolding manifesto in the aim of finding and comparing their focus on sustainability. The selected approach for the thesis is: *“Can a reintroduction of fishery in Halkaer bay, with the local people as a driving force, help to provide sustainable development in the area of Halkaer Aadal?”* Answers on this question have been found through three main discursions: (1) is there somebody who wants to become fishermen? (2) Will the civil society demand locally caught fish? And is the civil society as customers willing to pay more for a fishery with some fixed conditions? Both discursions look at the potential local participation in the economical institution. (3) Must the Government make the rules of quotas, when or how the fishery will be, and is it them who must control it? This question views the local participation through the political institution. The local participation in the institution of the civil society is already covered through Halkaer folk association and their plans to include more in the future.

Following is a presentation of the thesis findings.

12.2 The paper's findings

This chapter sums up the thesis findings concerning the including of local participation in the institutions of Halkaer Aadal. The main focus of the three institutions will also be summed up.

Today there are no local participants in the economical institution. This institution still exists only within the vision. However the vision has a strong focus regarding the economical system of the fishery project, especially the technology directly connected to the fishery. When dividing the technology into its four elements, this future institution shows mainly a focus on the elements of “product” and the “organising”. The products are the salmon Helt and Flounder, while the organising is about the separation of work into two fulltime jobs as local fishermen and one job of preparing the fish. The technology element of “technique” and “knowledge” is barely mentioned by referring to the previous fishermen’s “know-how”. Concerning the future participation in this institution, there are local habitants among the previous fishermen who are interested in returning to the profession. Local individuals may participate as customers due to the planned information and teaching, and because of the growing awareness and concern for sustainable production processes. Concerning the question whether the customers will demand locally caught fish it may be a question of quality along with issues like local identity and pride. Locally caught fish is fresher, which is often a demand among customers. A fishery that makes the local community self-sufficient may affect the local identity. Habitants may become proud of being a part of the local society.

There are local participants in the political institution. These are politicians from the Municipalities and the County of Northern Jutland, and the members of Halkaer folk association in the roles of local administrators. The county in general has several initiatives towards reducing the current agricultural pollution, which is their main concern. The technology more directly connected to the fishery, as stocking the bay with fry, is viewed as a strategy for the future. Some politicians are members of the “support-group” who gives the

folk association advice and response. These individuals are especially interested in the fishery project of concern for Halkaer bays fauna and its esthetical aspects. Local habitants in Halkaer Aadal that are more active in the vision are the 12 members of Halkaer folk association. These have a focus on the lack of knowledge at the local level and of inclusion of most of the local habitants in Halkaer Aadal. Different initiatives will deal with this. Information will be given, along with teaching and expert help from the support group and the university. Knowledge relevant for decisions relating to the questions of where to fish, the fishing quota and the allocation of quotas can be dealt with here. The local administrators may through this be able to manage the local fishery them selves.

The institution of the civil society has participants connected to the vision. The same 12 people in the folk association are the most active ones and some members of the “support-group”. Here the individuals are in the roles as members of different unions and they are neighbours, friends, and family members. However, these local habitants have a lot of other projects to take care of, so the fishery project has not become a concrete project yet. Most habitants in Halkaer Aadal are not participating yet, but there are many plans to include them. These participants focus are on the culture around the earlier fishery profession and on sustainability. The broad definition on sustainability includes the social dimension, which contains elements like enlightenment and participation. Halkaer folk association often mention the general motivation and the including of the people. Peasants will be included together with all habitants by listening to their wishes, visions and needs. The coordinator in the folk association also focused on the local identity in the community connected to something the habitants are able to do and be proud of. When viewing the focus of the civil society one may say that there is a main focus on the organisation element.

The next relevant findings consider the connection between the institutions. Institutions viewed here are the political and the civil society, because the economical doesn't

yet exist in reality. Communication between County and Municipalities with Halkaer folk association is described to be worse than the contact with the Danish Government, due to the lack of money and knowledge. The poor communication was confirmed when the County did not invite the folk association to a meeting with local farmers. These two examples show an unsatisfactory connection between the two institutions. It may indicate an inadequate communication on different levels within the political system.

All of the three institutions initiatives and/ or plans are in harmony with the Kolding manifesto. The fact that the idea of the EEA is based on the manifesto may be a sign that the knowledge taught to the habitants are in accordance to the manifesto. Only the future contains answer regarding the harmony between the actual praxis of the institutions and the manifesto. Following are some ideas for future guidelines.

12.3 Future directions

The reintroduction of a fishery in Halkaer bay can help to provide sustainable development in Halkaer Aadal by the help of local management. However there are some conditions for this sustainable development. One of them is the acquirement of new knowledge, while another is to improve cooperation between the local institutions.

Knowledge is the first condition examined. The local level in the institution of civil society has already a focus on this issue. However they do not mention the fishery project as a social event, which it can be. The focus might also be expanded to other institutions.

Knowledge is found in the history by the institution of the civil society. However, there is more than the know-how of fishermen that can be collected. Historical knowledge can be used in the creation of social and culture activities around the fishery project. Regarding achieving a higher local common identity it might be valuable to use the knowledge of the

previous fishery society. The awareness of this society's culture, with its pride and love for the nature may create a positive change in the local peoples apprehension¹²⁵. Changes may stimulate an interest in the bay, increase number of participants in the fishery project, and change action towards sustainable use of the bay and the surrounding environment. The civil society may for example bring this knowledge and the interest for this knowledge to the habitants by doing something fun. Activities may be directed towards young families with children, which is the largest group in the EEA. "Subject-days" is an example of an activity. This can be directed towards local schools, where children can participate together with their parents. To involve and teach the next generation will also be in accordance with the sustainable principles. Children are the next generation who will continue the work towards sustainable development. Common activities are also a way to connect local habitants more closely together around sustainable issues.

Historical knowledge can also give guidance to the fishery projects money barrier within the economical institution. In this case the agricultural history may help. In the years 1880 to 1920 lack of money was managed by establishing "co-operatives". This is a method of organising the work where individuals, who are unable to start something by them selves, cooperate by doing it together. The members pay the loans together and the profits are divided among them according to their contributions. This may also be done in Halkaer Aadal's fishery project. Habitants could participate by inventing co-operatives in the fishery project, and maybe also by cooperating with the peasants. "Mind-workers", like the initiators in the folk association, can help with the establishment as previously happened.

To improve the cooperation between the local institutions is the second condition that can provide sustainable development in Halkaer Aadal. The local institutions have different main focuses and there is a need for them to establish a joint understanding.

¹²⁵ The mental apprehension is one of the barriers for a fishery project. Interview, Peter Soendergaard, 20.06.01.

This can also be said in another way by turning to the Kolding manifesto. The Kolding conference's title and question was: "Should the numskulls save the world, since the eggheads won't?" An answer concerning Halkaer Aadal can be: "to make the vision of a fishery become a reality the numbskulls and eggheads need to cooperate and coordinate their initiatives".

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Appendix 1

**Interview question to the County biologist - Hans Heidemann,
15.06.01**

- Do you want a fishery? Why?
- What kind of barriers do you think exist for a fishery project?
- What can you do as a biologist to reduce or delete the barriers?
- What kind of live exists in the rivers and the bay today?
- What happens in the rivers and the bay when polluted by Phosphor and Nitrogen?
- Do you know how the recycled nourishment from agriculture can be used?
- Why is the Eelgrass so important?
- What happens during "Oxygen-loss"?
- Why does the weather make the conditions in the rivers and the bay worse?

Appendix 2

Interview questions to local historian - Jens Oestergaard, 15.06.01

History:

- What kinds of fish were there in the rivers and Halkaer bay before?
- Did the salmon “Helt” exist in the rivers and the bay?
- Where are the earlier fishermen and what are doing now?
- What were good and bad about the earlier fishery, and what may we learn from this today?
- Earlier there were a use of fishing technology that gave huge catches, how can we avoid this and the over-fishery to happen again?
- Was there earlier a cooperation between the peasants and the fishermen? How? May this be possible in the current society?

To day:

- Why do you want a fishery? What are your motivations?
- What kinds of barriers are there for a fishery project?
- What can you do as a local historian and a teacher to reduce and delete these barriers?
- What can others do to reduce and delete the barriers?
- Does there exist some fishermen today in Halkaer and Nibe bay?
- Is there someone that wants to become full-time fishermen?

- Are there other initiators for the fishery project?
- What do you think about the strategy of stocking the bay with fry? Is it sustainable?

Various issues

- Why is the stocking the bay with fry a success in Hjarbaek fjord?
- What is "Nibe fjord-group" doing?
- Are there many members in the Nibe fjord-group? (Their age? Profession?)

Appendix 3

Interview questions to the Municipality politician Mogens O. Madsen and the County politician Arne Soerensen, 15.06.01

- Do you want a fishery? Why?
- What kinds of barriers are there for a fishery?
- What can you do as local politicians to reduce or remove these barriers?
- What have to be done by others to reduce or remove these barriers?
- Who are the other political actors for the future of the Limfjord?
- Does there exist an action plan towards the pollution in the rivers and Halkaer bay?
- What are the eventual laws that concern the pollution in the rivers and the bay?
- Northern Jutland's County has said that they will take charge of and re-circulate most of the nourishment from agriculture. Are they doing this? What will they eventually do with the nourishment?
- What are the County doing for the life in the rivers and the Halkaer bay?
- Are there any good results from these initiatives?
- What is a "EU-habitat"? And what kind of meaning does this have for the local area?
- What does it involve to be defined as an "especially sensitive agricultural area"?
- What does the "MJV-arrangement" involve? And why are so few peasants involved?

Appendix 4

**Interview questions to coordinator in Halkaer folk association -
Peter Soendergaard, 20.06.01**

Concerning the fishery vision:

- What are your motivations for a fishery?
- Who are the initiators for a fishery project?
- What kind of barriers is there for a fishery project?
- What can you do as a teacher and through Halkaer folk association to reduce or remove these barriers?
- Which other actors are participating and are needed in the fishery project?
- What can they do to reduce or remove the barriers?

Concerning Halkaer Folk association:

- How many members are there in the association?
- Who are they? (Profession? Age? Gender?)
- How many members are there in the association's management?
- Who are they? (Profession? Age? Gender?)
- What is the history of Halkaer public house? Who owns it?

Concerning enlightenment and local participation:

- Have you received any response from the local habitants on the information that is already given?
- when will you start with meetings, courses, etc.?
- when are you going to find the 25 key individuals?
- Who has the ownership of the fishery vision today?
- What eventual changes do you wish concerning the ownership of the fishery vision?
- Is the “ownership” locally anchored in Halkaer Aadal?
- Have there been many advertisements in the newspapers, and have they been general or about specific projects?
- Is the work of making a homepage put into action? What will this page consist of?
- Have you informed through radio or television? Eventually, how many times, and what did you inform about?
- Will there be made and delivered a summary of the report about the EEA to the local households?
- Have the association a group that has the responsibility of enlightenment, participation, etc.?
- What has the association tried towards the pig peasants?
- How did eventually the farmers react?

Appendix 5:

E-mail Questionnaire to Peter Soendergaard, 21.08.01

Concerning the fishery project:

1. Will you fetch the fry from a specific place? Where?

-Who are running this place?

-What kinds of technology (technique, workforce? knowledge? organising?) are used in the fish farms?

-Eventually, where and by whom can I get this kind of information?

2. Or are you thinking of stocking the fry yourself as a part of Halkaer Aadals fishery project?

-Who can or will do this?

-What is needed of knowledge, technique, etc.?

-Where will this be done? Is it possible to do it in the pounds?

3. If the fry is picked up from somewhere else, is it the experts or the local people who put out the fry?

-Does this demand specific technology (technique, workforce? knowledge? Organising?)?

4. Does Halkaer Aadal folk association have contact with experts in the processes mentioned above?

-Are these eventual experts members of the support group?

-Or are there plans to contact a specific expert?

5. Are there concrete examples where knowledge of the processes mentioned above can be picked up?

6. Is there cooperation between the Municipality, the County or Denmark's government concerning this work?

7. Or are all the above questions processes too far into the future?

Different issues:

8. Have you, as you mentioned you would, been in contact with the peasants?

-How and where did the conversation take place?

-What and how did you give the information? What did you put a stress on?

-How was the farmer's reaction?

9. What are the assignments, which you are paid to do in your profession as a coordinator?

10. Are you finished in making a homepage now?

-Who is the page meant to be for?

-What has been stressed here?

11. Have you done something now to increase the participation in the local society?

-Eventually what?

-If not, when will this be done and what are you doing then?